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AN INDIFFERENCE APPROACH TO THE THEORY OF THE FIRM*

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Indifference curve analysis, a favorite indoor sport of economists, has proven itself to be invaluable in the exposition and development of many branches of economic theory. One can scarcely imagine, for example, analyses of consumer behavior, welfare, or international trade which did not at some stage employ indifference curves. On the other hand, this apparatus is used infrequently in the theory of the firm. Pricing and quantity decisions of the firm in both its output and factor markets, and decisions on firm size are usually analyzed in marginal terms, money or real, without recourse to indifference analysis.¹ The reason for this apparent neglect is not hard to find. For indifference analysis to be fruitful, utility must be derivable from two or more sources. We assume, however, in dealing with the firm that the utility derived by the entrepreneur from the operation of the firm is a monotonically increasing function of profit alone. By maximizing his profit, the entrepreneur automatically maximizes his utility.

Economists have usually been willing and even anxious to modify conclusions based on profit-maximizing models whenever circumstances have suggested that non-pecuniary motives were important. It is only recently, however, that attempts have been made to modify the models themselves by recognizing in their construction some non-profit-maximizing motivations.² If the

entrepreneur derives utility from some source other than profit, the groundwork is laid for the fruitful application of the indifference technique.

My rather modest intentions in this paper can be summarized as follows: (1) to depict the profit maximization principle in a way which has certain pedagogic advantages over the usual presentation and which may reflect more accurately the profit maximizing procedures used by management, who, it is claimed, does not compute marginal revenue and marginal cost; (2) to modify the profit maximizing model for the possibility that the entrepreneur derives utility from some variable which is a monotonically increasing (or decreasing) function of quantity, total revenue, or size; and (3) to show how some of our usual conclusions about the behavior of the firm, particularly in response to shifts in demand, must be adjusted when the profit motive is qualified in any of these ways.

PROFIT MAXIMIZATION AS AN INDIFFERENCE BETWEEN PRICE AND QUANTITY

A pure profit maximizer will not alter his behavior in response to changes in any variable which does not affect profit. Indifference curves between profit and any other variable must be drawn parallel to the axis on which this variable is measured. But profit itself depends in the short run upon the quantity sold, on the one hand, and price, that is, unit cost plus unit profit, on the other. Profit maximization can be viewed, therefore, in terms of an indifference between price and quantity.

Examine the average variable cost curve depicted in Fig. 1. Each point on that curve repre-

* A paper presented at the Annual Conference of the Southern Economic Association, Atlanta, Georgia, November 18, 1960. The author is indebted to Professors Auten and Rimlinger for helpful suggestions.

¹ The use of isoquants in production analysis is an exception. Indifference curves are sometimes employed also in the analysis of the behavior of duopolists.

² H. A. Simon has criticized extensively the profit maximization approach to the theory of the firm. See particularly his "Theories of Decision-Making in Economic and Behavioral Science," *American Economic Review*, June 1959, pp. 253-283. W. J. Baumol has made some stimulating suggestions for modifying traditional theory in "On the Theory of Oligopoly," *Economica*, August 1958, pp. 187-198, and *Business Behavior, Value and Growth* (New York: Macmillan Company, 1959), especially Part

I. See also on the Baumol hypothesis, M. H. Peston, "On the Sales Maximization Hypothesis," *Economica*, 26, pp. 128-136. Another effort, one which incidentally utilizes the indifference approach, is H. L. Johnson, "A Behavioral Approach to the Business Enterprise," *Southern Economic Journal*, July 1960, pp. 1-10. See also T. Scitovsky, "A Note on Profit Maximization and Its Implications," *Review of Economic Studies*, XI (1943), pp. 57-60; and M. Bronfenbrenner, "A Reformulation of Naive Profit Theory," *Southern Economic Journal*, April 1960, pp. 300-309.

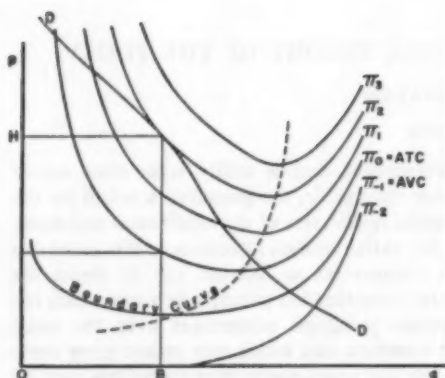


FIG. 1.—Iso-profit curves and profit maximization.

sents a price-quantity combination which, if realized, would permit the entrepreneur to cover exactly his total variable costs forcing him to suffer a loss equal to his total fixed costs. As a pure profit maximizer the entrepreneur must be indifferent to all of the price-quantity combinations lying on this curve. If we now add to this curve the rectangular hyperbola representing the unit receipts which in combination with each quantity will yield an amount equal to the entrepreneur's fixed costs, we obtain the average total cost curve. Any price-quantity combination on this curve will yield zero profit, so the profit maximizing entrepreneur must be indifferent as to which of these price-quantity combinations is realized. If we now add successively to this curve other rectangular hyperbolas each representing a constant total profit, the curves labelled π_1 , π_2 , and π_3 can be drawn. All price-quantity combinations on any one of these curves will yield, if realized, sufficient revenue to cover total costs plus the designated (constant) profit. Each iso-profit curve connects price-quantity combinations to which the profit-maximizing entrepreneur is indifferent; a higher curve represents a larger profit, and the curves, of course, cannot cross.

Now superimpose on such an indifference map the entrepreneur's estimate of his demand or opportunity curve. This curve connects all the price-quantity combinations from among which the entrepreneur can choose. As a profit maximizer he would select that combination which lies on the highest indifference curve (in Fig. 1, the quantity, OB, and the price, OH). He would act to maximize his profit without computing or

even thinking in terms of marginal revenue and marginal cost.⁸

If we now impose the usual restriction that the demand curve cannot be positively sloped, a boundary curve can be drawn which sets off those price-quantity combinations which are economically relevant from those which are not. Such a curve follows the average variable cost curve to its minimum point and then proceeds upward through the minimum points on the various iso-profit curves. In its upward path, this curve will be recognized as the marginal cost curve. No profit-maximizing entrepreneur will choose a price-quantity combination to the right or below the boundary curve, though perfect competitors will operate on the upward sloping portion of the curve or not at all. Any profit-maximizing firm facing a negatively sloped demand curve must, of course, select a price-quantity combination which lies to the left of the boundary curve.

This diagrammatic approach, the principle of which can be applied equally well to the firm's dealings in factor markets, should not yield con-

⁸The principle involved in this technique for maximizing profit is the selection of that price-quantity combination for which the slope of the demand curve is equal to the slope of an iso-profit curve. This condition must, of course, imply equality between marginal revenue and marginal cost.

Each iso-profit curve is defined as follows:

(1) $p_s = v + X/q$ where v is average variable cost and X is the specified fixed profit plus fixed cost. It follows that

$$(2) \quad dq/dq = dv/dq - X/q^2$$

The necessary condition for maximum profits is

$$(3) \quad dp/dq = dv/dq - X/q^2$$

where dp/dq is the slope of the demand curve. But X/q is simply the excess of price over average variable cost, i.e., $X/q = p - v$. Substituting in equation (3) and rearranging we have

$$(4) \quad p + q (dp/dq) = v + q (dv/dq),$$

i.e., marginal revenue, $d(pq)/dq$, equals marginal cost, $d(vq)/dq$. The indifference curve technique implies this equality but does not use it explicitly in deriving the firm's optimum price and output.

After this paper was written a study came to my attention by W. J. Eitman which develops an equal profit curve though not the family employed here. See *Price Determination in Oligopolistic and Monopolistic Situations*, Michigan Business Reports No. 33 (Ann Arbor, Mich.: University of Michigan, 1960).

clusions on the behavior of the firm which cannot be reached through the traditional marginal revenue-marginal cost approach. The approach does have certain, largely pedagogic, advantages, however, among which I would suggest the following:

- (1) The theory of the firm can be presented in a way which more closely parallels the theory of the household.
- (2) Profit maximization behavior can be demonstrated without the aid of marginal revenue and marginal cost computations. In this sense the approach may reflect more accurately the procedures actually used by management in attempting to maximize profit. A rough indifference map constructed by an accounting department might be confronted with demand estimates prepared by the sales department. The de-emphasis of marginal computations may even put to rest the mistaken assumption that such computations are a necessary condition for profit-maximizing behavior. As recently as June 1950, Professor H. A. Simon has criticized a study supporting the profit maximization assumption by writing, "Earley did not ask his respondents how they determined marginal cost and marginal revenue."⁴
- (3) The use of iso-profit curves simplifies the analysis of the firm's reaction to shifts in demand. An advertising campaign designed to increase the number of people buying the firm's product would tend to pivot the demand curve (net of selling costs) outward around its price intercept; one designed to bind existing customers more closely to the firm would tend to shift the demand curve upward around its quantity intercept. The different expansion lines traced out in this way make it a simple matter to show the effects of the policies on price and quantity.
- (4) The multiple maximum situation can be readily analyzed diagrammatically whereas the marginal diagrammatic approach involves some ambiguity.

⁴ *Op. cit.*, p. 264. The study criticized is J. S. Earley, "Marginal Policies of 'Excellently Managed' Companies," *American Economic Review*, March 1956, pp. 44-70. While the title would suggest that Professor Earley is testing a particular technique for maximizing profit, I believe it is clear from the context of the series of studies of which this is one that he is searching for evidence of profit maximization behavior itself.

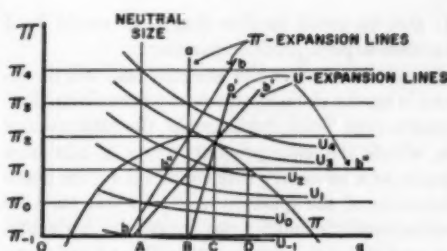


FIG. 2.—A profit-quantity indifference map.

UTILITY MAXIMIZATION: THE PROFIT-QUANTITY INDIFFERENCE MAP

Assume now that the entrepreneur attaches utility to the quantity sold or to some utility source which varies with quantity. Perhaps the sale of a larger quantity adds to his prestige in the community or among businessmen; perhaps the employment of more labor satisfies a philanthropic urge; perhaps his suppliers are relatives. In any event, his indifference curves between profit and quantity will not be the horizontal lines drawn in Fig. 2 for the pure profit maximizer, but will rather, at least for positive profits, slope downward to the right. If we also assume a diminishing marginal utility of profit, each higher indifference curve must have a steeper slope at any given quantity.

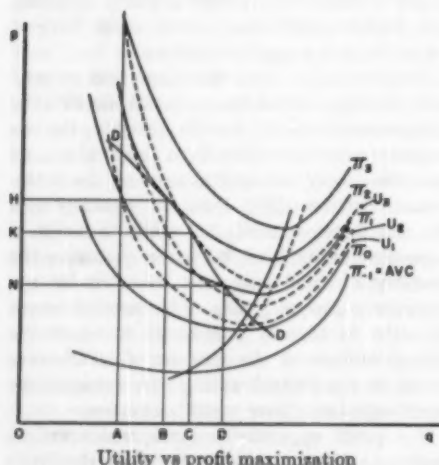
There should be some quantity (zero or positive) the sale of which has a neutral effect on the entrepreneur's utility. At this quantity, the entrepreneur derives utility from profit alone. At quantities above the neutral amount, the entrepreneur derives utility from the quantity sold also and therefore needs less profit to maintain a specified utility level. At lesser quantities the disutility of small size must be offset by appropriately higher profits. This neutral quantity (OA in Fig. 2) permits us to relate the ordinal utilities of the new set of indifference curves to the ordinal utilities the entrepreneur would enjoy as a pure profit maximizer.

If a profit opportunity curve, which defines profit as a function of quantity given the firm's demand and cost conditions, is superimposed on the indifference map, the point of tangency of this curve with the highest indifference curve would reveal the utility-maximizing entrepreneur's choice of quantity and also his related profit. Because his indifference curves are downward sloping instead of horizontal, his quantity sold will be larger (OC instead of OB in Fig.

2) and his profit smaller than they would be if he were a pure profit maximizer.⁵

How much larger the quantity sold will be depends on the slope of the entrepreneur's indifference curves. Take, for example, the extreme case in which the entrepreneur treats a minimum profit as a necessary side condition to the maximization of the quantity sold.⁶ In this case the entrepreneur's indifference curves are horizontal at and below this minimum profit and are vertical above it; he is a profit maximizer at below-minimum profits and a simple quantity maximizer at above-minimum profits. The quantity

⁵ The results achieved in Fig. 2 can be transposed to price-quantity axes. Because of the utility attached to quantity, the price-quantity indifference curves will be steeper than they were for the pure profit maximizer. It follows that the firm will produce a larger quantity at a lower price. The boundary curve in its upward sweep will now lie to the right of the marginal cost curve. Perfect competitors would supply larger quantities also and firms may even supply goods when variable costs are not quite covered. These results are depicted in the accompanying diagram in which solid-line indifference curves refer to a profit maximizer



and the broken lines represent the indifference map and boundary curve of the utility maximizer. OA is the neutral size depicted in Fig. 2.

⁶ It is this special set of indifference curves which underlies Professor Baumol's analysis. He would presumably draw them, however, with total revenue on the x-axis, although his diagram on p. 65 is based on quantity (and incidentally involves negative marginal revenue).

sold by such an entrepreneur when high profits are possible would be substantially larger than the profit maximizer's quantity. If in Fig. 2, for example, the minimum profit was Π_1 , the entrepreneur would select the output OD in preference to both OB and OC.

But while quantity is likely to be larger, so, too, are fluctuations in quantity likely to be larger. If the profit function is shifted downward in Fig. 2 in response to either downward shifts in demand, upward shifts in costs, or a combination of the two, two expansion lines can be drawn, one for pure profit maximization, the other for utility maximization. Let us assume first that the shifts in the profit function are such as to leave the profit-maximizing quantity unchanged. In that case the profit-maximizer's expansion line would be the vertical line labelled *a* in Fig. 2. The utility-maximizer's expansion line, on the other hand, can be expected to have a positive slope in this case, say the line (which need not be straight) labelled *a'* in Fig. 2. This is because the utility-maximizer's indifference curves become flatter at a given quantity as profits fall. Successive downward shifts of the profit function must bring the utility maximizer's quantity closer and closer to OB unless the profit function itself becomes sufficiently flatter as it shifts downward.

In the more usual case the profit function would shift downward in such a way that the profit maximizer would be induced to reduce his quantity sold yielding an expansion line similar to the one labelled *bb* in Fig. 2. Whether the utility-maximizer's expansion line will be flatter than the profit-maximizer's, as it is drawn in Fig. 2 (labelled *b'*), is more doubtful. His indifference curves become flatter as we move down on his indifference map but steeper as we move to the left. Two special cases may be of interest, however.

First, if the utility maximizer's indifference curves are consistent with the hypothesis that firms maximize quantity subject to a minimum profit constraint, that is, they are horizontal below a minimum profit and vertical above it, the expansion lines for profit and utility maximizers must coincide below minimum profit. But the expansion line for the utility maximizer in this case becomes horizontal for shifts in the profit function above the minimum profit level as the firm acts to maximize the quantity sold. (See the expansion line, *b b' b''* in Fig. 2.) For such shifts

the utility maximizer's quantity must fluctuate more violently than the profit maximizer's quantity.

The following hypothesis would yield a similar result: Businessmen derive utility from quantity (or the variable associated with it) only so long as profits are positive. In this case the entrepreneur's indifference curves would become horizontal at and below zero profit, and at zero profit the profit and utility expansion curves must meet.

In general, the stronger the preference for size when profits are high and the weaker this preference when profits are low, the greater the likelihood that quantity fluctuations will be magnified when broader utility maximization behavior is substituted for pure profit maximization behavior.

UTILITY MAXIMIZATION: PROFIT-REVENUE INDIFFERENCE CURVES

Professor Baumol has argued that businessmen attach more significance to total revenue than to quantity.⁹ This avoids the possibility that firms might sell quantities for which marginal revenue is negative and suggests also that businessmen are more profit conscious than would be required by the quantity hypothesis. Nevertheless prestige and stockholder support as well as other sources of utility may vary with dollar sales. For the multi-product firm total revenue is, of course, a more convenient measure of size than is quantity.

Indifference curves between profit and total revenue are depicted in Fig. 3. They have essentially the same characteristics as before. The profit opportunity curve superimposed on the indifference map bends under and back indicating it is drawn for the imperfect competitor. The range of possible tangency with indifference curves is limited to the negatively sloping range between OA and OC. OA is the profit maximizer's total revenue; OC is the Baumol solution based on the maximization of total revenue with a minimum profit constraint, provided that minimum profit is OD or less; OB is the total revenue consistent with the indifference curves drawn. For much the same reasons as before we would expect both quantity and quantity fluctuations to be larger for utility maximization than for pure profit maximization.

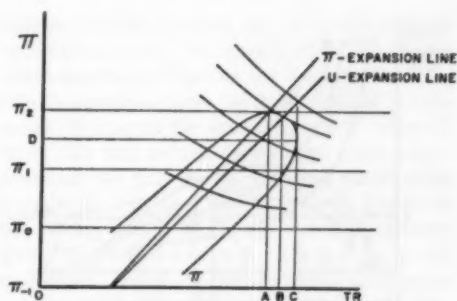


FIG. 3.—A profit-revenue indifference map.

Treating the entrepreneur as if (to use Friedman's phrase) he derives utility from quantity or total revenue or from variables associated with them permits various interpretations. While he may actually derive utility in these ways, he may mistakenly associate profit with quantity or total revenue and be acting in error. Suppose he feels that in general a larger quantity (or total revenue) means a larger profit. If now his expected maximum profits are not single valued but are instead a probability distribution associated with quantity, he would tend to choose profits associated with larger quantities in preference to the same profits associated with smaller quantities. In trying to maximize profit, he acts as if he derives utility from quantity (or total revenue) itself.

Alternatively the economist may interpret the behavior of businessmen in terms of broader utility maximization although it is actually consistent with attempts to maximize profit. The reluctance of a businessman to stop selling apparently unprofitable items or to stop selling in unprofitable areas may simply reflect his faith in the future and his estimate of the value of an established foothold. Further, an apparent emphasis on quantity at a given price should not be construed as an emphasis on quantity at any price. Emphasizing quantity after a price has been set may be merely an effort to push the sales force to the practicable limit or to shift the demand curve outward. As a final example, what appears to be an assignment of utility to total revenue may be simply a reflection of a lag between irrevocable short run production decisions and sales; given these production commitments, profits will be maximized when total revenue is maximized.

Finally, profit being a necessary condition to

⁷ *Op. cit.*, Chapter 6.

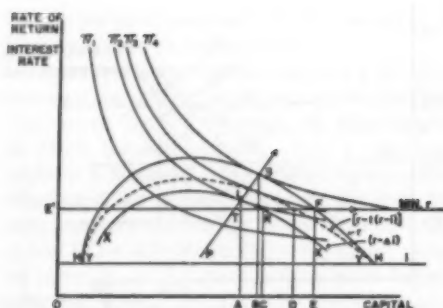


FIG. 4.—Size preference and profit maximization: Effects on Size and Size Fluctuations.

the survival of the firm, it seems reasonable that firms should feel assured of long run minimum profits before seeking utility via other means. This view suggests that firms would act to maximize profit in the short run but might alter investment policy in favor of other objectives. Let us investigate, therefore, the consequences of the following hypothesis: Given size in the sense of capital investment, firms attempt to maximize profit taking into consideration, of course, the effect of today's operations on tomorrow's opportunities. But in selecting size, firms act as if they attached utility to size. Firms are viewed as pricing to maximize profit (and the rate of return in the short run) but as investing to achieve a given rate of return.*

UTILITY MAXIMIZATION: INDIFFERENCE BETWEEN SIZE AND RATE-OF-RETURN

In Fig. 4 a set of iso-profit curves has been drawn by adding to variable interest charges various rectangular hyperbolas. Superimposed on the map is an opportunity curve, HH, indi-

*The plausibility of this hypothesis is suggested by evidence on pricing reported in R. F. Lansillotti, "Pricing Objectives in Large Companies," *American Economic Review*, December 1968, pp. 921-940. Take the following quote, for example (p. 923), "About one-half of the companies explicitly indicated that their pricing policies were based mainly upon the objective of realizing a particular rate of return on investment, in a given year, over the long haul, or both; but in most cases the target was regarded as a long-run objective." Apparently pricing to achieve a constant profit in the short run (which would yield a constant rate of return when investment is fixed) is not as dominant a practice as pricing to maintain a rate of return over the long run. But in the long run investment is variable. The attempt to earn a given rate of return in the long run might better be explained as an investment policy than as a pricing policy.

cating the rate of return associated with different capital investments assuming that each amount of capital will be utilized to maximize profit. The point of tangency with the highest iso-profit curve indicates that a profit-maximizing firm would select the size, OB.

If the entrepreneur derives utility from size or a related variable, a new indifference map should be drawn, all curves of which would be more steeply sloped at each size than the iso-profit curves. For such a utility maximizer, therefore, the opportunity curve would be tangent to the highest of these steeper curves at a size in excess of OB.

In the extreme case where a firm attempts to maximize size subject to the constraint that a minimum rate of return be earned, size would be determined by the intersection of the downward sloping portion of the opportunity curve with the minimum rate of return. In Fig. 4 a minimum rate of OE' would cause the entrepreneur to select the size, OE. Note, however, that the firm is assumed to utilize whatever capital it invests to maximize its profits. Operating its capital, OE, in any other way would yield a return less than OE'. For simplicity, I shall deal hereafter with utility maximizers of this special type recognizing that the conclusions drawn have mainly qualitative, not quantitative, significance.

If the firm attempts to adjust its capital to earn a constant rate of return, OE', shifts in its opportunity curve will generally lead to greater fluctuations in desired size, and presumably in investment, than would occur if the firm was a pure profit maximizer. The profit maximizer's expansion curve might be PTL in Fig. 4 while the size maximizer's would be PTF.

Two examples of the effects of shifts in the opportunity curve are illustrated in Fig. 4. Assume that the rate of interest rises and that the increase is subtracted from the opportunity curve yielding the new curve, XX. This curve is tangent to the iso-profit curve, Π_2 , indicating that the profit-maximizing firm would reduce size from OB to OA (or vice versa, if the interest rate now fell). The utility maximizing firm, on the other hand, would, in the extreme, want to reduce size from OE to OC. In terms of the more usual diagram employing marginal curves, such a firm adjusts its size according to the slope of the average rate-of-return curve while the profit maximizer adjusts according to the marginal rate-of-return curve which is generally steeper.

Investment by utility maximizers should be more interest elastic than investment by profit maximizers, assuming, of course, that the minimum rate of return acceptable to the entrepreneur is independent of shifts in his opportunity curve. It is certainly conceivable and perhaps likely that the minimum rate-of-return will be altered only slowly over time.

The other situation depicted involves the imposition of an income tax levied on all income in excess of interest charges. Such a tax has the effect of reducing the opportunity curve by the tax rate, t , times the excess of the rate-of-return over the interest rate, $(r - i)$. The new curve is labelled YY. The income tax will have no effect whatsoever on the optimum size of the profit-maximizing firm. (The new marginal rate-of-return curve will intersect the marginal interest rate curve, equal to the average in Fig. 4, at the same size as before.) On the other hand, the utility maximizer will now be induced to reduce his size from OE to OD. Income tax changes, therefore, may have effects on investment if firms are utility maximizers in the defined sense. The opportunity is open to them, but not to profit maximizers, to make larger before-tax profits by reducing size and thus to maintain their after-tax rate of return. As before, the effect depends on the constancy or slow adjustment of the minimum acceptable rate of return.

Even the pattern of firm behavior explored so briefly here can be reinterpreted as essentially profit maximizing behavior. Let us take the curve, HH, as representative of a set of opportunities available to the firm. Let us assume also that the minimum rate of return is determined as that rate, equal to or above the competitive rate, which is consistent with prevailing restrictions on entry into the industry. Let us also grant the entrepreneur some economic knowledge, or at least some common sense. His immediate opportunities would permit him to select the size, OB, and thus to maximize profits. His rate of return, however, would prompt entry into the industry until our entrepreneur would be earning only the minimum rate on a size certainly no larger than OB and very probably smaller. If he has any preference for size and maximum total profits at all, he would be wiser to choose initially the larger size, OE, thus discouraging entry and preserving long-run profits at the rate of OE' on his larger capital. In effect, his long-run view of his opportunity curve follows the line E'FH instead of HH. It

follows that his marginal rate of return is equal to his average over the span, E'F. At F it is now discontinuous, and follows the usual profit maximizer's marginal curve for larger capital investments. So long as the minimum rate of return is below the rate earned by straight profit maximization, the gap in the marginal curve must contain the marginal rate of interest (equal to the average in Fig. 4). In this case the apparent utility maximizer is seen to be a genuine profit maximizer. Empirical testing might shed some light on which of these two views of the same behavior offers the better explanation.

SUMMARY

The indifference approach to the theory of the firm which has been sketched here is fruitful because (1) it does not depend on the explicit use of marginal revenue and marginal cost calculations, (2) it simplifies the analysis of firms' responses to shifts in demand, and (3) it permits us to treat entrepreneurs as attaching utility to sources other than profits. The approach can be applied to both buying and selling decisions of the firm and also to decisions on size.

Entrepreneurs who act as if they attach utility to quantity or total revenue will generally be induced to produce a larger quantity, to charge a lower price, and to earn a smaller profit than would be the case if they acted as pure profit maximizers. Short-run movements in demand and cost conditions may induce such firms to exaggerate fluctuations in output as compared with those which would take place if they were pure profit maximizers.

Firms that *price* to maximize profit given their capital investment but which *invest* to obtain a given target rate of return will generally be larger than if they were pure profit maximizers. Investment by such firms is also likely to fluctuate more than it would if they acted solely to maximize profits. Their investment is likely to be more interest elastic and more responsive to shifts in demand and cost conditions; and it may even be sensitive to changes in income tax rates.

I should like to note in conclusion, however, that some apparently non-profit-maximizing behavior may be attributable to the observer. After all, the behavior of the firm depends not only on circumstances but also on the entrepreneur's subjective view of them. The observer who attempts to define this subjective view by inference from objective evidence is not infallible.

THE USE OF MONETARY POLICY

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The behavior of the financial side of the U. S. economy in the past decade has not conformed to expectations based upon the pre-existing theory. Some real fears proved groundless, and in general the financial system comported itself much more helpfully than had been expected by those who cut their professional teeth during the 1930's, who grew up on Keynes. We all have been quietly adjusting our thinking to the facts of recent experience. But it may be useful to take a broad look back over these events, to consider especially the potential stabilizing role of natural adjustments in financial markets, and in these terms to appraise some presently contending prescriptions for the use of monetary policy.

I. LESSONS OF U. S. FINANCIAL EXPERIENCE

Our general theme is that during postwar economic fluctuations there naturally occurred major financial adjustments that seem to have contributed substantially to minimization of economic fluctuations. This fact casts doubt on theories according to which interest rates, representing financial adjustments in general, are inflexible or are responsive mainly to economically irrelevant speculative notions of the public. It raises questions, also, about approaches that attribute all cyclical variation in credit conditions to monetary policy, or that take unchanging interest rates and credit conditions as the benchmark for thinking about policy. Especially interesting aspects of recent experience are these.

Interest rate flexibility. The burden of both the Keynesian and the Hicks-Luts interest theories is that long-term interest rates are inflexible, lagged in adjustment, and responsive to investors' expectations regarding future interest rates rather than to current economic conditions. Such views were widely held in the early postwar period, leading to the influential argument that interest rates should not be permitted to rise, however temporarily useful this might seem, since their downward inflexibility would make it very difficult to reduce them again when circumstances called for this.

The difficulties that these theories led us to

expect have not appeared. Long-term interest rates have been promptly responsive to swings in economic conditions. The changes in these rates discernably affected some important types of borrowing. They produced major reorientations of the direction of flow of investment funds. They involved a rate of change in yields and prices of long-term debt about as rapid as close observers of debt markets wanted to contemplate. Yields on long-term U. S. Government and corporate bonds fell by about one-half percentage point (one-sixth to one-eighth in relative terms) in the brief and mild recessions of 1953-54 and 1957-58. Prices of high-grade bonds moved by 10 to 15 per cent, sometimes in much less than a year.

Undue instability of interest rates. Another danger that was widely feared in the earlier postwar years seems inconsistent with this one, but in common with it rests upon attribution of interest rate changes predominately to speculative behavior of a nonadaptive sort. It was believed that termination of Federal Reserve support of the Government securities market would cause "the bottom to fall out of the market," that continued government support actions would be required to save the market from cumulative expectational swings of dangerous proportions.

It was in the face of such pessimistic predictions that the Federal Reserve took the initiative to put the bond market on its own. Experience in the past decade has been most encouraging, and out of line with the pessimistic predictions. The Federal Reserve has intervened in the bond market to limit broad price declines only on two occasions, in 1953 and 1958, and special circumstances and ineptness in debt management were involved in these. After the 1953 episode, there was no occasion to complain that changes in bond prices were inconsistent with economic developments. The 1958 complaint was only that the adjustment for a time proceeded uncomfortably rapidly. Aside from these brief episodes, the bond markets have accommodated themselves to a succession of relatively rapid rises and falls in interest rates corresponding to swings in economic conditions and this without succumbing

to panic or being carried away by their own momentum.

The cause of interest rate changes. Major short-run swings in interest rates recently have in every case been associated with shifts in economic conditions. During recession, interest rates declined; during recovery, they rose. There is the bulk of the story. Expectations regarding future interest rates seem to have played no major role as an independent determinant of short-run swings in interest rates, although expectations regarding the immediate future clearly affected the timing of rate adjustments. The speculative influence had its characteristic effect at both turning points in the 1957-58 recession in accelerating interest rate adjustments the general scale of which was consistent with other experience and presumably determined mainly by causes other than speculation.

It is a common belief that cyclical changes in credit conditions have been caused by monetary policy. In recession, interest rates are thought to decline because the Federal Reserve shifts from a policy of "tight money" to one of "easy money." The facts do not support this interpretation. The truth of the matter seems to be, rather, that during a recession natural economic adjustments occur which cause declines in interest rates and what looks like an "easy monetary policy," within rather wide limits no matter what the Federal Reserve does.

The variable over which the Federal Reserve exercises a direct and positive control is the volume of Reserve Bank assets and the reserve base of the commercial banks, and through these the volume of money and associated bank credit created by itself and the commercial banks. Therefore, for Federal Reserve action to be credited with causing a reduction in interest rates, the System must necessarily cause an increase in the rate of growth in bank credit and money. In recession, it did not characteristically do this, not, at least, in the earlier stages of recession when the bulk of interest rate declines occurred. On the contrary, in recession growth in the money supply and associated bank credit characteristically slowed or was reversed. If we look at the recession-related interest rate declines of late 1957-early 1958 and of the first half of 1960, we find that they occurred during the only two post-war periods of substantial money-supply contraction. The interest rate re-

ductions, thus, surely cannot be attributed to the behavior of money and bank credit. Their explanation must be sought elsewhere. Monetary policy has not caused timely cyclical variations in interest rates, but rather has somewhat opposed them.

Implications of the recent record. What Keynes felt had to be explained about the behavior of the long-term interest rate was its intractability, its inflexibility and perverse behavior. Thus, he turned to viewing the interest rate as a "highly psychological" or "highly conventional phenomenon," maintaining that: "Its actual value is largely governed by the prevailing view as to what its value is expected to be."¹ But our interest rate behavior in the post-war era surely does not seem to call for such an explanation, and this suggests that perhaps it is not, indeed, the proper interpretation of the 1930's either.²

The recent record suggests that with favorable institutional arrangements economic fluctuations tend naturally to generate changes in credit conditions that limit the fluctuation, that promote economic stability. To explain in detail how this happens evidently will require new development of theory, which recently has been pointed in so different a direction. However, we can perhaps suggest a broad picture of what happens to credit conditions during an ordinary cyclical fluctuation.

Recession occurs mainly because of a decline in the perceived attractiveness of investment in business inventory and plant and equipment. This causes a reduction in business demand for credit. In the absence of positive inducements to hoard, the flow of new savings and of loan funds from other sources largely continues into investment, although this causes and requires for its fulfillment a partial redirection of the credit flow into other areas of investment and a reduction in interest rates and easing of credit terms to make this possible. Thus, the loan funds freed by the decline in business investment tend to

¹ *The General Theory of Employment, Interest, and Money* (New York: Harcourt, Brace, 1936), pp. 202-04.

² A different interpretation of the factors that prevented a timely decline in long-term interest rates in this country in the early 1930's is given in my article, "The Term Structure of Interest Rates," *Quarterly Journal of Economics*, November 1957, pp. 509-15.

finance other expenditures that partially offset the originating destabilizing force. The increases in prices of debts and related investment assets produce capital gains that tend to offset the capital losses likely occurring on real investment assets and equities. In this manner and others, the changes in credit conditions contribute to development of a psychological climate favorable to reversal of the economic contraction.

In a period of economic expansion, of course, all of this is reversed. Business investment regains its attractiveness, business demands for loan funds rise, credit terms become tighter, some of the borrowing and spending that filled in during the recession is squeezed back out again, and declines in bond prices tend to offset the bullish movement of other investment assets. Obviously, we should prefer a thoroughgoing stability to all of this, but until we can tame the fluctuations of business investment that are (along with untoward changes in the Federal fiscal position) the main initiating factor, we should be properly grateful for forces that minimize the scale of swings in total output and employment.

This interpretation can be viewed as implying that the doctrines of the classical economists have, after all, some measure of applicability to modern short-run income analysis. Say's Law does not solve all of our problems for us, but the principle is something more than a stupid mistake. When attitudes toward hoarding do not change markedly, funds freed by a reduction in spending in one area do tend to find their way to employment elsewhere through the mediation of flexible debt markets and variable interest rates and credit terms. Not only does the "natural rate of interest," defined as that rate consistent with stability of income, vary over the cycle in response to changes in the perceived profitability of investment, but the market rate has some natural tendency to move along with it, if the banking system and the government do not counteract built-in financial adjustments.*

* We have reference to an economy, such as the U. S. has been, in which economic fluctuations are a domestic creation and impediments to international movement of funds suffice to permit substantial international differences in interest rates. The second condition is becoming less applicable, but consideration of the matter may persuade us that interest rates responsive to domestic economic conditions are sufficiently important that

This does not argue that we should sit back and depend upon natural law to stabilize the economy. A conclusion that natural stabilizing forces will inevitably produce results good enough to meet our needs would be as unjustified as the conclusion that natural stabilizing forces are insignificant and the level of total demand must be entirely administered by government. The approach that the record of experience now seems to support is one between these extremes. We should be ready to take strong action to combat economic fluctuations or prolonged departures from the desired level of total demand if circumstances require this. But government policy also should take full cognizance of the natural stabilizing forces operating in the economy and should try to shape our economic institutions in such a way as to develop the potential usefulness of such forces.

More specifically, two implications for policy planning are these: (1) Interest rates and credit conditions naturally vary in response to changes in economic conditions, and these variations play a useful role in combating economic instability. Policy, therefore, should not be planned on the basis that interest rates naturally would be or ought to be stable. (2) Government policy should be guided by such criteria with reference to the variables proximately controlled as to assure that policy, in itself, does not interfere with or offset natural stabilizing adjustments. However much *more* than this government policy may try to be, surely it should not be *less* than cyclically neutral.

II. BENCHMARKS FOR GOVERNMENT FINANCIAL POLICY

It now is widely appreciated that in planning and evaluating fiscal policy we must take as our measure the significant variable that the government directly controls, namely, the content of tax and expenditure programs, best measured by the estimated cash surplus or deficit *at a fixed income level*. In recession, the current fiscal position naturally shifts toward a deficit. In a major recession, no ordinary attempts to increase tax rates and reduce expenditure programs are likely fully to offset this tendency, and the effect of even heroic efforts in this direction is uncertain. By aggravating the recession, such

our international financial institutions should be shaped so as to continue to make them possible.

efforts might only make the ultimate deficit larger. But if a swing towards a government deficit in recession cannot be prevented by any ordinary policies and perhaps cannot be prevented at all, evidently it is foolish to take the fact of such a swing as evidence that fiscal policy is in a meaningful sense anticyclical. With this test, perhaps all conceivable fiscal policies might be labeled anticyclical.

Thus, we should as a first approximation define a neutral fiscal policy as one that leaves tax and expenditure programs unchanged in a recession, permitting "built-in flexibility" to work unhampered. An anticyclical fiscal policy involves program changes that in recession have the effect of increasing the estimated deficit at a given income level.

We wish simply to extend this same logic to monetary and debt management policies, where misleading notions about interest rates, central banking, and government borrowing have impeded its application. In the case of monetary policy, the false indicators analogous to fiscal policy's current deficit are the level of interest rates and bank reserve positions. We have seen that interest rates naturally go down during recessions, even though the Federal Reserve shifts from increasing the money supply to reducing it. Possibly with our present financial institutions the Federal Reserve may be incapable of preventing at least some decline in interest rates in a recession. It has done so in modern times only briefly during periods of liquidity panic and rapid monetary contraction, and these episodes have only delayed the interest rate reductions and by aggravating the economic contraction may have made them ultimately much larger than they otherwise would have been.

If some decline in interest rates in recession is virtually inevitable, the fact that it occurs does not indicate that monetary policy is being used in a way that is optimal or anticyclical. We can conceive of a highly refined interest rate criterion that would specify in any particular recession just how great an interest rate decline is consistent with monetary neutrality. But we do not possess such a criterion, or anything close to it. Thus, since short-run changes in interest rates are so heavily determined by factors other than monetary policy, these are not now a reliable measure of or criterion for policy, and we must look elsewhere.

Another possibility is the behavior of bank

reserve positions. When member banks on balance have excess reserves, it would be argued, then credit conditions are "easy" and monetary policy is pushing towards economic expansion. When member banks are heavily in debt to reserve banks, they are restrained from extending credit. Credit conditions are "tight," and the force of monetary policy is to restrain expansion in aggregate demand.

The error in this approach is quite similar to that of the interest rate approach. It relies upon an unpredictably shifting benchmark. Just as interest rates naturally vary cyclically, so do the desired or equilibrium reserve positions of the commercial banks. In a period of cyclical expansion, banks are willing to, and judge it proper to, go substantially into debt to the Federal Reserve Banks to respond to the large demands for business loans induced by the prosperity. In recession, when loan demands fall off, when expectations become bearish, when the psychological state of the economy calls for retrenchment and conservatism, when available yields generally are below Federal Reserve discount rates, and when banks want to become liquid in anticipation of the loan demands of the ensuing recovery period—then the banks are unwilling to remain heavily in debt to the Reserve Banks. Therefore, member bank borrowings decline in recession, and bank reserve positions "ease," within wide limits whatever the Federal Reserve does. They "ease" because bankers insist that they shall "ease." The real question is not whether member banks will get out of debt, but whether this will or will not be attended by a contraction of the bank reserve base and the volume of bank credit and money. If in a recession the Federal Reserve attempts to limit "easing" of bank reserve positions by reducing the total volume of bank reserves, this may give rise to abnormally stringent liquidity conditions that cause banks to want to be yet more liquid, to have still "easier" reserve positions. If banks insist upon "easy" reserve positions, they can, by liquidating enough loans and investments, always get them. They demonstrated that in 1929-1933.

Here again, then, it is clear that we must expect cyclical variation in bank reserve positions, and just how great a variation at any particular time is required in order that monetary policy may be judged neutral or anticyclical is very difficult to say. This depends upon the structure

of credit demands, the way Federal Reserve discount operations are administered, and the way bankers perceive the situation and their liquidity needs. No refined criterion taking these things into account seems yet to have been developed.

What this brings us back to is the conclusion that the basic guide and criterion for monetary policy, the variable that both is of central importance and is effectively controlled by the Federal Reserve is the money supply and the volume of associated bank credit.⁴ If in a recession the System continues the earlier rate of growth in money and bank credit it is in a meaningful sense cyclically neutral. Natural forces working to change credit conditions then are permitted to work unimpeded but are not artificially aided by policy. This is the result that a thoroughgoing commodity money system would produce, and it is not evident that a modern managed money system ought to aspire to less than this. To go further and "lean against the wind" means to cause bank credit and money to grow more rapidly in recession than in prosperity. It seems reasonable to think that this would be useful, and we should probably feel our way in this direction in the future. But let us here only proclaim that the avoidance of procyclical variation in bank credit and money should be a minimum objective for monetary policy.

We apply this logic to debt management policy in quite a similar way. Lacking detailed criteria as to how interest rates ought to behave under various conditions, we manage the government debt so that it at least does not interfere with natural stabilizing adjustments in the economy. A debt management policy that is thus neutral is one that makes the maturity structure of government debt unresponsive to cyclical swings in the economy.⁵ A policy that

⁴Since the volume of bank time deposits is in an immediate sense controlled by the holders, the public, I should define our measure here as the volume of demand deposits and currency outside banks. It is with respect to this medium-of-exchange money and the credit associated with it that the Federal Reserve and the commercial banks exercise the traditional initiating powers of the money creator.

⁵An attempt to define a somewhat more refined benchmark providing for fiscal imbalance and the economy's growth needs for liquid assets is made in my article, "A Positive Debt Management Program," *Review of Economics and Statistics*, May 1959, pp. 92-98.

leans more heavily in the direction of short-term financing in recession can be considered anticyclical. One that concentrates sales of bonds in recession is procyclical and in some measure acts to offset the economy's natural stabilizing financial adjustments.

III. THE FEDERAL RESERVE MONETARY THEORY

The Federal Reserve System in the postwar period contributed importantly to the theory and practice of monetary policy. It was courageous Federal Reserve action that finally freed us from the pegged interest rates of the early postwar period. The System has developed an interpretation of the stabilizing role of cyclical variations in interest rates and credit conditions. It has carried out successfully a disengagement from the Treasury bond market that permits that market normally to be responsive to supply and demand forces, necessarily including Treasury debt management actions, and permits System policy to be governed by its own objectives. It has departed from the British central banking tradition in looking away from interest rate criteria, using the discount rate mainly passively to follow market rates. It has developed the idea of using bank reserve positions to guide policy, embodying the conception of a normal cyclical variation in bank "free reserve" positions, i.e., excess reserves less borrowings. Without these achievements of the Federal Reserve, the record of behavior of flexible debt markets the implications of which we are here considering might never have been compiled.

However, there still are grounds for concern over the recent performance and present state of Federal Reserve policy. In brief, these are: (1) Despite the attention that the System has lavished upon determination of policy, what it has produced is something less than a neutral policy as measured by the behavior of bank credit and money. The money supply characteristically declined or stopped growing in recession. (2) The System has not worked out any standards or guides to policy that are sufficiently clear and definite to facilitate evaluation of policy or even, indeed, agreement as to what policy is. The System does not entirely avoid the temptation to take the easing of interest rates and bank reserve positions in recession and their tightening in prosperity as the result of System policy and a testimonial to its appropriateness.

The record of System actions and statements suggests that the principal cause of policy failures is an improper use of the "reserve pressure" approach to policy, and of "free reserves" as a guide to policy.^{*} The System's policy is not a naive one of holding free reserves constant during economic fluctuations. Rather, the most common pattern has been a level of free reserves of about \$500 million in recession and minus \$500 in prosperity. However, even such a moving criterion has not been kept so closely attuned to bankers' desired reserve positions as to make an acceptable record in terms of what finally matters, the behavior of money and bank credit. That monetary contraction occurred immediately before and during the early stages of the 1957-58 and 1960-61 recessions is especially disturbing.

The other criticism is that Federal Reserve characterization of its policy in public statements and in the directives of the Federal Open Market Committee is so vague as to discourage intelligent discussion and criticism. It is couched in terms of such unhelpful variables as "the level of restraint" on bank credit, "conditions in the money market," and "credit conditions." Such terms of reference encourage confusion between the effects of monetary policy and the effects of natural financial adjustments during economic fluctuations.

The way out of this problem seems to be a greater emphasis upon the behavior of the money supply and associated bank credit as a guide to policy. Directing policy in this way would have produced a much better performance in each of the postwar recessions and avoidance of the only major errors in short-run policy changes that the crude standards now available to us disclose. Such an approach does not preclude using reserve positions as a guide of day-to-day and week-to-week actions, and taking account of interest rate developments when these are such as to indicate an unhealthy con-

dition that ought to influence policy. But the basic working target would be a behavior of money and bank credit that is not procyclical.

IV. RECENT U. S. DEBT MANAGEMENT POLICY

U. S. debt management policy in the past decade has progressed in escaping from the pegged-interest-rate philosophy of the 1940's, and in moving to an approach oriented more largely about the maturity structure of outstanding government securities, which we have argued is ordinarily the preferable guide. But it has been disappointing in its increasing acceptance of the idea that debt management policy must be procyclical, that bond sales must be concentrated during recessions. The reasons given for this are: (1) that bonds cannot be sold during prosperity without unduly increasing interest rates and disrupting debt markets, and (2) that concentrating bond sales in recessions saves the Treasury some interest charges. In rejoinder, it must be argued (1) that bond sales undoubtedly could with new offering techniques be spread steadily over prosperity and recession in a cyclically neutral manner if the Treasury were willing to accept the concept of flexible and market-determined interest rates, and (2) that the stakes in the economic stabilization game are too high and our competence at the game as yet too slight to undertake to save money by running a debt management policy that tends to aggravate economic fluctuations. Thus, we call for a greater willingness to meet market yields in selling Treasury bonds than has yet been evidenced, and a greater ingenuity in devising sales techniques that will permit a procyclical debt management policy to be avoided.

V. THE RADCLIFFE PRESCRIPTION

Recently an official investigation of the British financial system⁷ came up with a policy prescription that, although it refers specifically to British institutions, stems mainly from a certain view of the role of monetary and financial adjustments in a market economy. What is striking about this approach is that it is so completely at odds with the one developed here and with recent trends in U. S. thinking. We have argued that natural changes in credit conditions can

^{*}References to the behavior of "free reserves" and to variables such as the "degree of restraint" in the record of policy actions of the Federal Open Market Committee seem to reflect this approach. See the 1958 and 1959 *Annual Report of the Board of Governors of the Federal Reserve System*. Federal Reserve actions in recent years do not seem explainable except in terms of a "reserve pressure" approach, probably supplemented by closely related interest rate and "money market pressure" criteria.

⁷*Report of the Committee on the Working of the Monetary System* (London: Her Majesty's Stationery Office, 1959), popularly known and hereafter referred to as the Radcliffe Report.

be such as to combat economic fluctuations. The Radcliffe authors cannot even imagine a system in which such natural variation in credit conditions can occur, and they argue that even such changes in general credit conditions as can be brought about by government have no substantial effect upon short-run economic developments. A general evaluation of the argument of the Radcliffe Report is more than can be undertaken here. What we can do is to indicate, against the terms of reference developed above, that the Report's conclusions as to the use of monetary policy rest upon a financial theory that is contradicted by U. S. experience.

The policy prescription is this: that the monetary authorities should be governed by an interest-rate criterion, the specific objective being to stabilize interest rates in the short run while adjusting them to the authorities' anticipation of the economy's longer run needs. "It is tempting to suppose that a policy of absolutely stable interest rates should be followed," but although they should "discourage markets from taking too short-run a view of what was happening... the authorities should not aim at complete stability of interest rates, but should take a view as to what the long-term economic situation demands and be prepared by all the means in their power to influence markets in the desired direction." (Paragraphs 493, 488. Subsequent references also are to paragraph numbers.) To American ears this formula is not exactly new and exciting, being substantially the pegged-interest-rate policy that we discarded ten years ago, and to which there has been little disposition to return. The basic objection to this approach, of course, is that (particularly as it utilizes general monetary and debt management tools) it uses policy actively to thwart natural stabilizing financial adjustments and tends to aggravate economic fluctuations. A policy that ignores and aggravates a present recession so that the authorities can concentrate on adjusting interest rates to cope with long-run future problems regarding which their ignorance is virtually complete—this may seem to approach the ultimate in wrongheadedness. How, we may ask, does the Radcliffe Committee arrive at this?

It begins, we may fear, by donning some doctrinal blinders that lead it to proclaim the impossibility of "leaving interest rates to be determined, as is sometimes urged, 'by market forces'.... In present circumstances—and all

foreseeable circumstances—it is not possible: the authorities must have a positive policy on interest rates, because [government] debt operations are inescapable" (492, also, see 982).

I cannot find this position supported, and it is difficult to see that one can accept it. The guides to monetary and debt management policies that we suggested above would under ordinary conditions leave short-run changes in interest rates to be determined by market forces. We have in this country followed policies fairly close to this, and looking backward it seems not only feasible but desirable to adhere to the guides yet more closely.

But, to pursue the committee's argument, why undertake to stabilize long-term interest rates in the short run? The answer is because they are naturally unstable and fluctuations are likely to get out of hand (340, 583-90), because sharp changes would severely weaken financial institutions (491), and because a "credit squeeze" is discriminatory in effect (459, 469, 472, 932 ff.). On the first two points, there were apprehensions in this country before we took the plunge following 1950, but happily experience to date suggests that with reasonable institutions and management the problems ordinarily are not important. The discrimination argument still is heard here, though it usually takes off from an assumption of artificially tight credit conditions deliberately engineered by the Federal Reserve rather than caused naturally. The doctrine is a bit awkward to develop in the latter case. If in prosperity the perceived profitability of real business investment increases, causing a natural increase in interest rates and a shift in the flow of loan funds, is this necessarily "discriminatory"? What is the benchmark? Are unusually easy credit conditions in recession discriminatory in the reverse direction? Indeed, the credit allocation machinery may be imperfect, and may require remedial institutional reforms, but freezing interest rates or keeping them low seems better calculated to obscure the faults of the allocation system than to remedy them, and its price in economic instability may be high.

The other side of the argument for stable interest rates is the familiar doctrine that rate changes do no significant good because credit demands are inelastic, and people will borrow and spend about the same amount whatever, within reasonable limits, the level of interest

rates (451-74, 487, 521). The evidence and argument bearing on this question is complex, but perhaps it is fair to say that the practical and operational difficulty implied is that if we attempt to have monetary and debt management policies that are effectively anticyclical, or even cyclically neutral, the inelasticity of shifting credit demand schedules will cause interest rate changes that are intolerably great. Our experience, however, seems to indicate that this is not the case and, thus, that, whether the borrowers will admit it or not, there must be some elasticity in credit demands.

The Radcliffe authors reject the idea that central bank policy should be guided by "some notion of the 'supply of money,'" and can seldom resist an opportunity to disparage the concept of money. They heave monetary theory *in toto* out the window, proclaiming: "We have not made more use of this concept [velocity of money] because we cannot find any reason for supposing, or any experience in monetary history indicating, that there is any limit to the velocity of circulation; it is a statistical concept that tells us nothing directly of the motivation that influences the level of total demand" (395, 391, also 388, 504, 981). One must be very particular, I should think, in how he looks at data on the income-money relation if he is not to find therein some regularity and some reason for supposing that there is, in normal conditions, a limit to its increase.

A reason given for deemphasizing the money supply as a guide to monetary policy is the authors' concern with "the wider structure of liquidity in the economy.... The decision to spend thus depends upon liquidity in the broad sense, not upon immediate access to money" (389-90, also 524).

Such an observation in no way conflicts with our view of financial stabilization. The Federal Reserve System now sees monetary policy as operating in part by affecting liquidity conditions, as do we. We are concerned with what

debt management policy does to the maturity structure of government securities because this is the measure of its influence upon the liquidity position of the public. Seemingly what is distinctive about the Radcliffe approach is that it visualizes "liquidity" as a great breach in the dam of financial constraint, one that permits people to finance substantially any expenditures that they want to finance and makes attempted restraint by general monetary and debt management policies futile. No theory is given as to how the general public manufactures its own liquidity and thus escapes the liquidity effects of monetary and debt management policies. In recent U. S. experience, the public does not seem to have nullified financial constraint by invoking the magic of liquidity. Expansion of demand has been effectively, probably excessively, restrained.

All in all, the Radcliffe view of the world fits ill with our experience, which is the reason why so many U. S. economists with similar ideas fifteen years ago now are moving in various new directions. A better appreciation for thought and experience abroad might have made the Committee's appraisal of British monetary ideas and institutions more productive.

VI. CONCLUSIONS

An awareness that natural financial adjustments can significantly combat economic fluctuations leads us to some precepts for development of theory and economic stabilization policy: Financial theory should escape from its preoccupation with tidy expectational interest theories and seek to fathom the whole complex of financial adjustments that accompany economic fluctuations. Stabilization policy should focus on benchmarks and minimum performance standards with regard to the variables that policy immediately controls, which will ensure that the authorities do not simultaneously interfere with, and take credit for the effects of, natural stabilizing financial adjustments.

INTEREST RATES ON THE PERIPHERY AND IN THE CENTER OF ECONOMIC DEVELOPMENT*

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I. INTRODUCTION

Practically all economists who have studied the South agree that relative to the United States the South has remained economically undeveloped. Economists and others have variously interpreted the phrase "economic development." My own preference is a broad interpretation. Economic development is an increase in aggregate income; changes in per capita income need not be specified provided no community becomes worse off.¹ Such a definition presupposes an economy in which aggregate and per capita incomes are increasing but at varying rates as between communities.²

More important than definitions of economic development are the specification and the identification of conditions necessary for economic development. This is a task that calls for the ingenuity of scholars in many disciplines. Among the principal contributions made by economists are hypotheses derived from analyses of the operation of product and factor markets under various conditions. Hypotheses have been established on conditions which will facilitate the operation of these markets and on conditions which will hinder their operation. One of these hypotheses, developed by T. W. Schultz and others, asserts that product and factor markets will operate more efficiently within a matrix of economic development than they will on the periphery of such a matrix. The purpose of this

paper is to examine the empirical validity of this hypothesis for a part of one factor market, the capital funds market in the 6th Federal Reserve District, which includes the greater part of the Southeastern United States. Section II surveys the capital funds market in the 6th Federal Reserve District. Section III examines in detail the hypothesis to be tested. Section IV tests the empirical validity of the hypothesis discussed. Section V presents the conclusions. An appendix presents data on earning ratios of member-banks in the 6th Federal Reserve District.

II. THE CAPITAL FUNDS MARKET IN THE SOUTHEAST

A. Capital to Labor Ratio in the Southeast

To judge from available studies one principal economic characteristic of the Southeast is that the bulk of its labor force is employed in low capital using industries such as agriculture, forestry and fishing.³ And even within such broad industrial categories, the Southeast's labor force is concentrated in activities in which the ratio of capital to labor is low relative to the ratio in other areas of the country. Investment per worker is also low, not only in the private sector but in the public sector as well. The Southeast's per capita investment in schools, roads and other public facilities is lower than in the country as a whole.

B. Source of Investment Funds

Let us turn to an examination of the capital funds market in the Southeast. In order to gauge the operation of this market I shall draw heavily on the results of continuing studies made by the Federal Reserve Bank of Atlanta.

* This paper was delivered before the 38th Annual Conference of the Southern Economic Association in Atlanta, Georgia, November 18, 1960.

I am indebted to Webster C. Cash, Marshall R. Colberg, Richard G. Cornell, and Sherman Krupp for useful comments and suggestions and to the Inter-University Committee for Economic Research on the South for a grant which made this study possible. I am also indebted to Charles T. Taylor and the Federal Reserve Bank of Atlanta for useful comments and suggestions as well as for making available to me data on the capital funds market in the 6th Federal Reserve District.

¹ T. W. Schultz, *Economic Organization of Agriculture* (New York: McGraw-Hill, 1953) p. 160.

² *Ibid.*, p. 159.

³ Charles T. Taylor, "The South's Capital and Credit Needs: Problems and Solutions with Particular Reference to Capital Expenditures by Industry," a paper prepared for the Twenty-eighth Annual Conference of the Southern Economic Association, November 21 and 22, 1958.

The principal source of investment funds in the Southeast is the banking system. In October 1955, of the \$1,670 million owed by businesses in the 6th Federal Reserve District approximately \$1,320 million was owed to banks in the 6th District of which \$1,080 million was owed to banks in the city, county, or metropolitan area of the borrower.⁴

Commercial banks are the keystone in the Southeast's financial structure. They hold the bulk of the total assets of all financial institutions. More important, they alone can create deposits. Their operations are not restricted to making short-term loans. They also make intermediate-term and long-term loans both to private and public sectors of the economy. In this regard banks in the Southeast are not different from banks elsewhere in the country.

Commercial banks in the Southeast have had an impressive growth in the years since World War II. The total assets insured of commercial banks in the 6th District increased 70 per cent in the 10 year period from December 31, 1947, to December 31, 1957, from \$9.6 billion to \$16.3 billion. A clue to the responsiveness of district banks to investment opportunities is provided by the increase of investments from \$4.5 million to \$5.9 million, or approximately 30 per cent, in the same years, and the increase of loans and discounts from \$2.3 million to \$6.1 million. At the same time, total deposits in commercial banks have grown sharply, reflecting a rapid growth in per capita incomes.

Total assets of all insured savings and loan associations in the 6th District have expanded five fold in the period between 1947 and 1957. In Florida the total assets of these associations increased from \$230 million to slightly under \$2 billion. The total assets of credit unions in the 6th District grew from \$35 million to \$305 million. These savings institutions make short-term and intermediate-term cash installment loans.

Consumer finance and insurance companies also flourish throughout the 6th District. To judge from available data, consumer finance companies are particularly important in Florida and Georgia. Insurance companies have enlarged operations in the 6th District, so that in 1957

their total assets amounted to \$2.8 billion compared to \$835 million in 1947.

These data give only a partial view of the capital funds market in the 6th District. They do not include the operations of private individuals, though these operations are probably relatively unimportant. More important, they do not include the operations of government-sponsored agencies. Nor do these data cover all of the "out of District operations." A survey of October 1955 showed that the 6th District has been a net borrower, as the amount of outstanding debt then owed by 6th District borrowers to banks outside the District was \$348 million.

C. Demand for Investment Funds in Southeast

Its relatively low income together with its low ratio of capital to labor would presumably place the Southeast in a position of greater dependence than other areas upon short-term and long-term capital funds. The relative efficiency of the area's capital market may accordingly have had substantial influence on income and on the ratio of capital to labor.

An efficient capital market is one which does not impose external capital rationing thereby permitting attainment of equilibrium. Fixed resources and short-run market conditions permit demanders to acquire sufficient short-term capital inputs to equate rates of return from capital in their respective industries with prevailing rates of interest. In the long run internal industrial reorganization under changing tastes and technology can be attained. Capital rationing need not be solely external; internal capital rationing may be imposed within an industry because of uncertainty or other factors. The effect will be the same as the effects of external capital rationing: neither short-run nor long-run equilibrium will be attained. An inefficient capital market will prevail.

Tang and others have concluded that all capital markets serving agriculture are more or less inefficient.⁵ Agriculture is a principal in-

⁴ Alfred P. Johnson, "Flow of Bank Loans to District Business," *Sources of Funds for Capital Investment in the Southeast* (Atlanta, Ga.: Federal Reserve Bank of Atlanta, 1960), p. 19.

⁵ Anthony Tang, *The Economic Development of the Southern Piedmont* (Chapel Hill, N. C.: University of North Carolina Press, 1958), Chapter V. See also W. H. Nicholls, "A Research Project on Southern Economic Development with Particular Reference to Agriculture," *Economic Development and Cultural Change*, October 1952, pp. 190-195; T. W. Schultz, "Capital Rationing, Uncertainty and

dustry in the Southeast, and it would seem reasonable to extend Tang's conclusion to apply to agriculture throughout this area. Let us gauge the efficiency of the capital funds market serving industries of the area other than agriculture.

Studies made by the Federal Reserve Bank of Atlanta, the University of Florida, and by Greenhut and Colberg at Florida State University indicate complaints by industry regarding access to local capital markets. According to these studies, one fourth of the manufacturing firms established since 1946 in the wealthiest state in the district, Florida, registered dissatisfaction with the amount of funds they were able to raise locally.⁷ Atkinson reports that nearly every security firm doing an underwriting business can cite case after case of local corporations unable to raise long-term capital even while the national total of security issues was breaking records.⁸ He notes that in the 6th District there is a high mortality rate on proposals to raise funds through stock or long-term bonds by new and small local concerns. Indeed even when offerings are formally completed there is a heavy rate of withdrawals. In the period between 1955 and 1957, 38 issues aggregating 7 million dollars were withdrawn.

A survey conducted by the Federal Reserve Bank of Atlanta, to determine the geographical source of funds obtained by manufacturers in the District for expansion in the period 1956 through mid-1958 is suggestive in gauging the efficiency of the capital market in the District.⁹ Taylor reports that the answer is clear when firms in the District are classified into Southern firms and firms having home offices and operations in other sections of the country as well as in the District. National firms obtained their funds through the home offices, and these firms

accounted for 90 per cent of total expenditures. Southern firms, according to Taylor, required large external funds. Internal funds obtained from earned surplus, depreciation reserves, and other sources accounted for only 30 per cent of the cost of expansion by Southern firms. Large Southern firms relied more on internal financing than did the smaller Southern firms, apparently the pattern for the country as a whole. The survey, moreover, confirmed the tendency for small Southern firms to seek debt rather than equity financing; equity capital accounted for only one fifth of external funds for expansion.

Moreover, nine out of ten firms that had obtained funds for expansion reported that they had no difficulty obtaining the funds. As Taylor points out, however, the firms that were not successful did not have an opportunity to register complaints. Accordingly, we should be careful in attempting to generalize about the efficiency of the capital funds market. Indeed, we should not overlook the firms—one out of ten—which did register complaints regarding financing. Most of them were small firms and, since small firms rather than corporate giants are the rule rather than the exception in the Southeast, their complaints should not be taken lightly.

D. Summary

Available studies suggest that economic development of the Southeast cannot be financed by the resources of the capital funds market in the Southeast, at least that portion of the market included in the 6th District. The area is on balance a capital importer. And the fact that the Southeast is a capital importer suggests that the area has access to capital markets in other areas. To judge from these studies, however, access to capital markets by demanders of funds is uneven. New and small businesses whose principal source of funds is the capital funds market in the Southeast have the greatest difficulty in acquiring funds.

III. THE HYPOTHESIS AND SOUTHEASTERN CAPITAL FUNDS MARKET

This section presents an hypothesis which attempts to explain locational divergencies in economic development. T. W. Schultz in his *Economic Organization of Agriculture* advances an hypothesis consisting of three parts:

1. Economic development occurs in a specified locational matrix; there may be more than one

Farm-Tenancy Reform," *Journal of Political Economy*, June 1940, pp. 309-324.

⁷ Thomas R. Atkinson, "Corporate Cash Through Security Sales," *Sources of Funds for Capital Investment in the Southeast*, op. cit., p. 37. Melvin L. Greenhut and Marshall R. Colberg, "Why Industry Locates in Florida," prepared for the Florida Development Commission, July 2, 1958.

⁸ Atkinson, "Corporate Cash Through Security Sales," op. cit., p. 37.

⁹ For the results and discussion of this survey see Charles T. Taylor, "Where District Manufacturers Get Funds for Expansion," *Sources of Funds for Capital Investment in the Southeast*, op. cit., pp. 41-43.

such matrix in a particular economy. This means that the process of economic development need not occur in the same way, at the same time, or at the same rate in different locations.

2. These locational matrices are primarily industrial-urban rather than rural in composition.

3. The existing economic organization works best at or near the center of a particular matrix of economic development, and it also works best in those parts of agriculture which are favorably situated in relation to such a center. Less satisfactory organization is found in those parts of agriculture which are at the periphery. As Schultz points out, our economic history strongly supports the first two parts of the hypothesis, but there is probably disagreement about the third. As Schultz suggests, it is on this proposition that our researchers should concentrate to determine the empirical validity of this part of the hypothesis. While Schultz's hypothesis was advanced primarily for agriculture, it may also be significant for the capital funds market and, as a consequence, for the economic development of the Southeast.

One implication of the third proposition of Schultz's hypothesis is that interest rates charged by banks in the Southeastern states will exceed those charged in the more developed areas of the United States. Another implication is that bank rates within the Southeastern region will be lower in the urban centers than in small cities and rural regions. We should accordingly expect to find significant variation between interest rates charged in centers of economic development and rates charged on the peripheries of such development owing in part to the greater risk of enterprise on the peripheries.

Greenhut notes in his location study that August Lösch found support for this implication in *Federal Reserve Bulletin* statistics on prevailing rates for bank loans and time deposits in Texas cities in 1936. The data indicate that these rates varied with distance from the nearest Reserve Bank city.⁹ And John Black writing in 1929 observes that interest rates in all southern and western states were higher than in the more developed areas.¹⁰

⁹ Melvin L. Greenhut, *Plant Location in Theory and Practice* (Chapel Hill, N. C.: University of North Carolina Press, 1956) p. 127.

¹⁰ John Black, *Production Economics* (New York: Henry Holt & Co., 1929), p. 199. Quoted in Melvin L. Greenhut, *Plant Location in Theory and Practice*, p. 127.

IV. EMPIRICAL VALIDITY OF HYPOTHESIS

A. The Data

To test the hypothesis that interest rates are higher on the periphery than they are in the center of economic development I use earnings on loans to total loans of banks in the 6th District that are members of the Federal Reserve System. Limiting the analysis to study of member banks was made necessary by limitations of data, but should not invalidate the conclusion because these banks play so important a role in the capital funds market in the Southeast. The evidence presented in Table I shows that although member banks are not as numerous as non-member banks, member banks have on deposit with them the bulk of the bank deposits in the 6th District.

The earning ratio is part of an annual compilation of Operating Ratios of Sixth District Member Banks made by the Research Department, Federal Reserve Bank of Atlanta. This ratio, and other ratios in the Operating Ratio series, are based on reports of earnings and dividends for the entire year 1959 and the average of report of condition items for December 31, 1958, June 10, 1959, and October 6, 1959. The average ratio of earnings on loans to total loans for each zone represents averages of individual bank ratios, i.e., the averages were not computed from aggregate dollar figures.

Earning ratios are perhaps a better approximation of rates charged by lenders than they are of interest rates paid by borrowers. The difference between lender's rates and borrower's notes is the amount of broker's fees. In the short-run these two rates will probably move together with the result that earning ratios may serve as a rough indicator for interest rates.

B. Matrices and Periphery of Economic Development in the Southeast

I have selected six urban centers as centers of economic development in the 6th District. These centers are Atlanta, Nashville, Birmingham, New Orleans, Jacksonville and Miami. The choice of these six centers is dictated by their obvious economic importance in the 6th District. Thus Atlanta is the location of head office for the 6th Federal Reserve District while Nashville, Birmingham, New Orleans, and Jacksonville contain branch offices. The choice of Miami, although it does not contain a branch office, can be

TABLE I
NUMBER OF MEMBER AND NON-MEMBER BANKS AND THEIR DEPOSITS IN THE 6TH
FEDERAL RESERVE DISTRICT, JUNE 10, 1959
(\$'000)

	Member	Nonmember	Total	Member	Nonmember	Total
Alabama	93	145	238	1,524,633	405,538	1,930,171
Florida	116	170	286	3,258,721	1,352,512	4,611,233
Georgia	64	346	410	1,777,563	863,808	2,641,371
Louisiana	36	76	112	1,568,916	521,690	2,090,606
Mississippi	22	70	92	446,214	315,781	755,995
Tennessee	71	130	201	1,454,375	489,554	1,943,929
Total	402	937	1339	10,024,422	3,948,883	13,973,305

Source: Research Department, Federal Reserve Bank of Atlanta.

justified by its dominant economic importance in southern Florida.

I have selected four geographical zones for each urban center that is assumed to be also a center of economic development. The peripheries of these zones are 50 miles, 100 miles, 150 miles and 200 miles. The centers are designated by the first letter of the city and the zones by subscripts 1, 2, 3, and 4. For example, the circle labeled A_1 , A_2 , A_3 , and A_4 represents "A" for Atlanta and the subscripts 1, 2, 3, and 4, the zone. The centers and their zones are presented in Fig. 1.

Since member bank data on individual bank operations are considered confidential the staff of the Federal Reserve Bank of Atlanta collected and classified earning ratios of banks by size of bank as judged by the size of its deposits and by its location by zone. Several deposit size categories are used. I shall use primarily two deposit size categories. One is up to 10 million dollars and the other is 10 million dollars and over. The choice of these two size categories is dictated by the availability of data for the several zones and centers of economic development.

The banks are identified by exact location. They are then placed into their respective zones. A bank located in Atlanta is placed into zone A_1 . When a bank is located, for example, in two or more zones, e.g., A_1 and B_1 , it is eliminated from the zone furthest from the city considered as the center of economic development. Moreover, banks are excluded from one zone when they fall within a county through which a line runs but are outside the zone.

Although there are ample economic reasons for the choice of the selected urban centers, the

choice of their zones is dictated more by the availability of data than by economic reasons.²¹ Fortunately, this is not critically important. What is important is that once the choice of zones is made that it be consistently followed.

A slightly different approach to that adopted in this paper but more relevant in the economic sense is to take a relatively well developed county as the center of economic development and as the periphery a number of poorer neighboring counties. This approach has much to recommend it. Such an approach would avoid one limitation of the present paper. This limitation is that banks included in the centers as well as on the peripheries of economic development are members of the Federal Reserve System. The number of such banks per county and their location in the 6th District is presented in Fig. 1. The evidence in Fig. 1 suggests that these banks are located in the relatively richer counties where the product and factor markets presumably operate in a more efficient manner. For example, the poorer counties of Georgia are excluded from the analysis since members of the Federal Reserve System are not located in these counties. However, the lack of adequate data on earning ratios of non-member banks excludes the adoption of the above approach. Furthermore, even when a member of the Federal Reserve System is located in one of the poorer counties, the Federal Reserve Bank of Atlanta is bound by the rule of not releasing confidential data for individual banks or for

²¹ For an excellent discussion of location theory see Melvin L. Greenhut, *Plant Location in Theory and Practice* (Chapel Hill, N. C.: University of North Carolina Press, 1956).

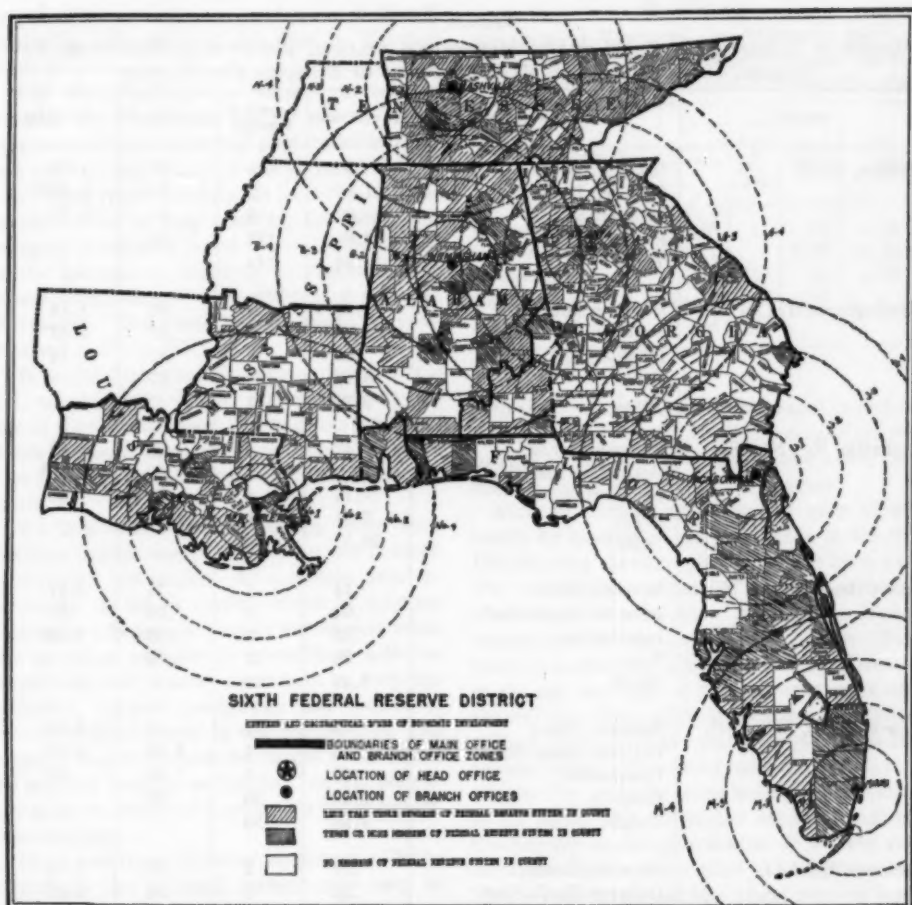


FIG. 1

groups of banks when the number is less than three.

C. Method of Analysis and Results

Let us now test the empirical validity of the hypothesis discussed in this paper. Do earning ratios vary from one periphery or zone to another? Do earning ratios vary among the member banks themselves according to deposit size?

In order to answer these questions the technique of two criterion analysis of variance with disproportionate class frequencies is useful. And the method that I shall use owing to the disproportionate class frequencies is that of un-

weighted means. Accordingly, the total variation in data on earning ratios of member banks in the 6th Federal Reserve District is divided into the variation attributable to bank size (row effect), the variation attributable to zone (column effect), and the interaction between bank size and zone.¹²

A summary of the results of the analysis for the several economic development matrices is presented in Table II. In none of the matrices

¹²For details of the analysis of variance with disproportionate class frequencies and the method of unweighted means see W. Allen Wallis, "Lectures on Statistical Inference," during 1949-50 given at the University of Chicago.

TABLE II
ANALYSIS OF VARIANCE AND TESTS OF SIGNIFICANCE FOR ATLANTA, BIRMINGHAM, NASHVILLE, NEW ORLEANS, JACKSONVILLE, AND MIAMI MATRICES OF ECONOMIC DEVELOPMENT

Matrix ^a	Source of Variation	Sum of Squares	Degrees of Freedom	Mean Square	"F" Value
Atlanta, A ₁ -A ₄	Between Zones	.50	3	.17	1.70
	Between Bank Size	1.86	2	.93	9.30**
	Interaction	.90	6	.17	1.70
	Error	13.80	133	.10	
	Total	17.24	144		
Birmingham, B ₁ , B ₂ , B ₃	Between Zones	.16	2	.08	1.14
	Between Bank Size [†]	1.34	2	.67	9.57**
	Interaction	.05	4	.01	.14
	Error	8.17	123	.07	
	Total	9.72	131		
Nashville, N ₁ , N ₂ , N ₃	Between Zones	10.47	2	.06	.50
	Between Bank Size [†]	1.18	2	.59	4.92*
	Interaction	7.11	4	.08	.66
	Error	7.31	61	.12	
	Total	26.07	69		
New Orleans, NO ₁ , NO ₂	Between Zones	.13	1	.13	2.17
	Between Bank Size [†]	.04	1	.04	.67
	Interaction	.33	1	.33	5.50*
	Error	.98	17	.06	
	Total	1.48	20		
New Orleans, NO ₁ , NO ₃	Between Zones	.44	1	.44	1.76
	Between Bank Size [†]	1.02	1	1.02	4.08
	Interaction	.02	1	.02	.08
	Error	6.45	26	.25	
	Total	7.93	29		
Jacksonville, J ₁ -J ₄	Between Zones	.77	3	.26	1.73
	Between Bank Size [†]	.31	1	.31	2.07
	Interaction	.31	3	.10	.67
	Error	7.90	53	.15	
	Total	9.29	60		
Miami, M ₁ -M ₃	Between Zones	0	1	0	0
	Between Bank Size [†]	.62	1	.62	6.20*
	Interaction	.21	1	.21	2.10
	Error	3.39	34	.10	
	Total	4.22	37		

* Significant at .05 level.

** Significant at .01 level.

† Three categories: Under \$5, \$5 to \$10, and over \$10 million.

‡ Two categories: Under \$10 and over \$10 million.

§ Two categories: Under \$25 and over \$25 million.

¶ Owing to the lack of adequate data on groupings by bank size, in some of the economic matrices, Birmingham, Nashville, New Orleans and Miami, not all of the peripheries of zones are used simultaneously in the analysis.

of development presented in the table are variations in member bank earning ratios between zones statistically significant at either the .05 or .01 level. Earning ratios vary significantly be-

tween member banks according to their deposit size in four of the seven cases presented in the table. In one of the seven cases, New Orleans and between peripheries NO₁ and NO₂, inter-

action between bank size and zones is significant. The test results in this case are therefore inconclusive.

The above analysis is focused on selected areas in the 6th District and on several deposit size categories. The overall picture, however, is not substantially altered if the entire District is considered simultaneously. In order to analyze the entire District simultaneously the deposit size category is reduced, owing to available data and in the interests of simplicity, to two categories. These categories are "up to \$10 million and over \$10 million." The results of the analysis are summarized in Table III.

To judge from the results presented in Table III, earning ratios do not vary significantly between the various zones. The variations in these ratios between member banks when classified into two deposit size categories are highly significant.

We thus conclude that earning ratios vary between deposit size categories but not between peripheries and centers of economic development. In so far as earning ratios of member banks are adequate indicators for interest rates, the empirical evidence is inconsistent with the hypothesis that interest rates tend to vary significantly between peripheries and centers of economic development in the 6th District. This suggests that the market for capital funds served by member banks is as "perfect" on the periphery as in the center of a particular industrial urban complex.

These results are, however, consistent with the hypothesis that although interest rates may be higher in less developed areas of the country owing in part to the greater risks of enterprise there, they also reflect to a considerable degree the importance of the banking structure. A closely knit banking structure such as that of the member banks of the Federal Reserve System provides a nation wide market for capital funds rather than many local money markets. Other factors, of course, have also contributed to the narrowing of regional differences in the price of bank credit. The more obvious of these factors are rapid economic growth and industrialization in the South and West, general improvement in methods of communication, the establishment of financial institutions which tend to contribute to credit fluidity, and the extension by large banks of their lending activities on a wide scale throughout the country. Coupled

TABLE III
ANALYSIS OF VARIANCE AND TESTS OF SIGNIFICANCE FOR ALL MATRICES OF ECONOMIC DEVELOPMENT IN THE 6TH FEDERAL RESERVE DISTRICT

Source of Variation	Sum of Squares	Degrees of Freedom	Mean Square	"F" Value
Between Zones	2.15	17	.13	1.63
Between Bank Size	2.97	1	2.97	37.12*
Interaction	1.73	17	.10	1.25
Error	34.38	431	.08	
Total	41.23	466		

* Significant at .01 level.

with these factors have been the rapid growth in recent years of deposits in all regions and the expansion of bank reserves and of bank assets that may be converted readily into reserves.

Although earning ratios do not vary significantly by location of member banks in the 6th District, they do vary significantly by bank size. The evidence presented in Table IV indicates that smaller banks have significantly higher earning ratios than larger banks. These differences in earning ratios seem to reflect differences in the size and type of business customers and the size and composition of their loan portfolios.

Bank practices in the past have played an important role in determining rates charged to customers. For example, there has been a tendency in the recent past for smaller banks throughout the country to charge concerns of a given size somewhat higher rates than did large banks.¹³ This did not mean that one should conduct business only at large banks. And the reason was that at the same time the larger banks charged borrowers of similar size on similar loans a higher rate for loans of less than \$1,000 than at the smaller banks. This probably reflected the practice at many large banks of making such loans in the personal loan department where rates are usually higher than in departments devoted entirely to business lending.

In gauging the extent of internal and external capital rationing in the 6th District it would be very useful indeed to have more detailed knowledge of member and non-member bank opera-

¹³ For a discussion of factors influencing interest rates see Richard Youngdahl, "The Structure of Interest Rates on Business Loans at Member Banks," *Federal Reserve Bulletin*, July 1947, pp. 803-819.

TABLE IV
MEANS OF EARNING RATIOS AND NUMBER
OF BANKS BY AREA AND BANK SIZE

Area and Bank Size (in Millions of Dollars)	Mean	Number of Banks
1) Atlanta:		
a) Under 5	7.49	66
b) 5 to 10	6.96**	41
c) Over 10	6.56**	38
2) Birmingham		
a) Under 5	7.54	58
b) 5 to 10	6.95**	41
c) Over 10	6.55**	33
3) Nashville (N ₁ , N ₂ , N ₃)		
a) Under 5	7.40	28
b) 5 to 10	6.77**	21
c) Over 10	6.00*	21
4) New Orleans (NO ₂ , NO ₃)		
a) Under 10	6.54	11
b) Over 10	6.39*	10
5) New Orleans (NO ₁ , NO ₄)		
a) Under 25	7.10	18
b) Over 25	6.04**	12
6) Jacksonville		
a) Under 10	7.08	25
b) Over 10	6.66**	36
7) Miami (M ₁ , M ₂)		
a) Under 10	6.96	8
b) Over 10	6.40*	30

* Significant at .05 level.

** Significant at .01 level.

* Significant at .30 level.

tions. This is particularly true in the area of bank loans to small business. To judge from available information it is the so-called small business which suffers substantially more capital rationing in production (in the use of capital by firms) than larger firms. It would be useful to determine the contribution of existing bank practices to such capital rationing and higher earning ratios at the smaller banks.

A useful start into an examination of banking practices in the 6th District has been made by the Staff of the Federal Reserve Bank of Atlanta. The Staff's studies indicate that present lending practices and policies of banks in the District differ markedly from those of a decade ago. Brandt and Davis report that the large metropolitan banks changed their lending policy more so than other banks in the District, although banks located in small towns changed

theirs too.¹⁴ For example, they write that a small businessman who wanted to borrow from a large metropolitan bank in 1956-57 was probably asked to keep on account with that bank a portion of the loan. And bankers that already had such practices insisted that borrowers maintain higher balances than previously. These and other changes such as more collateral and higher standards of credit worthiness to small businesses which have the effect of raising interest paid by borrowers may be temporary. They occurred in 1956-57 during a period of tight monetary policy. On the other hand these changes in lending policy may be permanent.

Since the problem of adequate small business financing turns on the issue of long-term credit and equity capital, it may well be that we are asking too much of the commercial banking system. Commercial banks are limited in the extent to which they can make loans outside the field of higher grade, shorter term obligations. And the reason for this is the demand nature of their liabilities.

If it may be that some people are asking too much of the commercial banking system in solving the problem of small business financing, others are asking even more of the Federal Reserve System. The Federal Reserve System should properly concern itself directly, it seems to me, with the behavior of the stock of money and not with interest rates or capital requirements of business whether small, medium, or large in size.

In my opinion, a more preferable solution to the problems of small business financing is to be found in regional development corporations. These corporations have as their main objectives the removal of impediments and imperfections in the market organization for supplying intermediate and longer term funds to small and medium-size businesses. These organizations are particularly useful in servicing those businesses that are situated on the peripheries of industrial-urban complexes. Thus they would be useful in servicing businesses located in such areas as the Southeastern United States. A more detailed and fresh study of existing bank practices together

¹⁴ Harry Brandt and W. M. Davis, "Small Business, Tight Credit and District Bankers," *Credit Needs of Business Borrowers and Lending Policies and Practices of Commercial Banks in the Southeast* (Atlanta, Ga.: Federal Reserve Bank of Atlanta, 1960), p. 12.

with the problem of small business financing might indicate important gaps in the 6th District's existing financial framework.

V. CONCLUSION

This paper has attempted to ascertain the empirical validity of the hypothesis that there exists a significant variation in interest rates between centers and peripheries of economic development. The results of the statistical tests do not support this hypothesis in the 6th Federal Reserve District which incorporates a substantial area in the Southeastern United States. There is not a statistically significant variation between earning ratios of member banks located in centers and those located in the peripheries of economic development in the 6th Federal Reserve District. A statistically significant variation in earning ratios occurs between member banks when they are classified by deposit size. The smaller banks have significantly higher earning ratios than the larger banks.

In judging the results presented in this paper caution must be exercised. Only data for members of the Federal Reserve System have been considered, which is both an advantage and a disadvantage. It is an advantage because member banks of the Federal Reserve System have on deposit the greater bulk of deposits in the 6th Federal Reserve District. These banks, in terms of total assets, are in fact the keystone to the banking system in the District. It is a disadvantage in that member banks tend to be similar in a great many respects. Their operations whether in the center or on the peripheries of economic development, do not tend to vary greatly.

An alternative approach would include in the analysis data for non-member banks and particularly for non-member banks in the poorer counties in the District. Lack of adequate data on non-member banks, unfortunately, excludes their consideration in the analysis presented in this paper.

A FLEXIBLE INCOME-CONSUMPTION-SAVINGS TAX*

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The basic outlines of contra-cyclical fiscal policy in simple economic models are well known; indeed, they are taught to nearly every sophomore student of economic principles. Likewise familiar is the principle that a given increase in government expenditures has a greater expansionary impact than an equivalent cut in government revenues owing to a positive marginal propensity to save out of disposable income. This latter principle suggests a built-in bias toward spending increases rather than tax cuts (especially income tax cuts) to deal with recessions so long as there is any attempt to minimize budget deficits.

It is the purpose of this paper to suggest that with respect to the personal income tax this result follows from the implicit taxation of both personal savings and personal consumption at the same marginal rate. It then follows that the introduction of explicitly different tax rates for these two components of personal income, with provisions for appropriate variations in each rate, would provide a means of varying considerably the deflationary impact of a given total of tax revenue.

It may, of course, be argued that such a varying impact is already possible, given a changing mix of personal income, corporate profits, sales and excise taxes, each presumably differing in its effect on the savings-consumption allocation of the national income. In the United States, however, taxation of consumption is heavily shared with the states, hence in large measure beyond the reach of Federal fiscal policy-makers. Moreover, such taxes are necessarily proportional with respect to expenditure on taxed goods and are classified as progressive, regressive, or proportional with respect to income only hazily. Only by taxing consumption individual by individual is it possible to design deliberately, for example,

a progressive consumption tax which does not depend on a shaky definition of "luxuries." Furthermore, the task of designing an appropriate mix of taxes to achieve a given impact on savings and consumption is not easy; even the marginal propensities to save and consume associated with the mainstays of Federal finance, the corporate profits and personal income taxes, are not known and can only be crudely estimated.

This article, then, is devoted to a discussion of the theoretical consequences and administrative considerations of replacing the single rate structure now applicable to all taxable personal income by two rate structures, one applicable to that fraction of income devoted to consumption spending, and the other to the remainder of income that is saved. Such a tax is an extension (and radical alteration) of Kaldor's proposed expenditures tax.¹ It is based on the identity $\text{Consumption} + \text{Saving} = \text{Income}$, and the assertion that both consumption and saving are already effectively taxed as income, so that the only innovation lies in taxing them at different rates.

Among the many possible implications, the following appear to be worthy of mention:

(1) By concentrating fiscal policy on the revenue side of government fiscal operations, expenditures can be set with respect to the traditional criteria of public vs. private need or by the more recent considerations of income distribution, without regard to stabilization effects. This possibility now exists, of course, but would result in larger budgetary deficits during periods of recession than an equivalent amount of stimulus achieved by increased government expenditure. Deficits as such are not repugnant to the

¹ Nicholas Kaldor, *An Expenditure Tax* (London: Allen & Unwin, 1955). Kaldor's provocative proposals stem in part from the difficulties in defining income or taxable capacity and considerations of incentives and risk-bearing. The present author's interest arises from a quite different quarter, but in terms of administration arrives at Kaldor's solution, namely, measuring consumption as income less savings. The new departure consists in levying a rate of tax on savings, which in Kaldor's proposal are implicitly taxed at a rate of zero.

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new orthodoxy, but they do complicate monetary policy and increase the problems of the debt managers.

(2) While it is true that few taxes, if any, fall wholly and finally on the taxed magnitude, our ability to estimate the impact of income taxes on savings and consumption decisions would gain some precision by having separate rates applicable to each.

(3) Varying separately the tax rates applicable to consumption and saving is similar in effect to changes in the interest rate; that is, the rate of exchange between present and future consumption is altered. It might seem to follow that all the weaknesses ascribed to interest rate policies with respect to influencing the savings-consumption mix of income would be applicable to the present proposal. This possibility is examined below, and found not likely to be an important defect in the proposed mechanism.

By way of illustration, the reader is asked to consider the following simple macroeconomic model. It is, of course, possible to illustrate the proposal by means of highly complex and sophisticated models, but the argument is essentially verbal, so that little is lost by keeping the mathematical illustration as simple as possible. Suppose that the level of National Income is given by

$$Y = C + I + G$$

when

Y = National Income = Net National Product, in the assumed absence of indirect business taxes and similar adjustments

C = Consumption

I = Net Private Investment (assumed to be autonomously determined throughout the discussion)

G = Government Expenditure for Goods and Services

Suppose further that prices and wages are inflexible downward, and do not rise as long as aggregate demand is less than or equal to full-employment aggregate supply. Money magnitudes may then properly be taken to change proportionately with real magnitudes, such as income, consumption, and the like. The consumption function is given by

$C = \alpha + \beta D$, a simple linear function of

D = Disposable Income with the usual parameters α and β .

Further,

$D = Y(1 - r)$, where r is the single proportional income tax rate applied without deductions or exemptions to the entire national income, assumed, in the absence of corporate saving, transfer payments, and the like, to be identically equal to personal income. Furthermore, rY represents the only source of government revenue in the model.

The consumption function may now be written

$$C = \alpha + \beta Y(1 - r)$$

Further simplifying assumptions as already noted are that prices and factor costs do not change, so that real national income varies proportionately with money national income.

Suppose now that full employment national income is \$540 Billions, that investment is autonomously established at \$50 Billions, that government expenditures are set (without regard to stabilization considerations) at \$50 Billions, and that the consumption function parameters are given as $\alpha = \$100$ Billions and $\beta = \frac{2}{3}$. The equilibrium level of national income is then given by assigning values to r , according to the formula

$$Y = \frac{\alpha + I + G}{1 - \beta + r\beta}$$

which, given the above assumptions, becomes

$$Y = \frac{200}{1 - \frac{2}{3} + \frac{2}{3}r}$$

In order to find the unique r consistent with full employment, one substitutes \$540 Billions for Y , and r is quickly found to be 5.55%.

It may further be observed that with respect to the full-employment solution, tax revenues are \$30 Billions, consumption is \$440 Billions, and saving from disposable income is \$70 Billions so that the budget deficit of \$20 Billions offsets the discrepancy between private investment and full employment saving.

If, on the other hand, one inserts into the model with the given parameters the require-

ment that the budget be balanced, with expenditures of \$50 Billions, the national income drops below the full employment level to \$500 Billions and the (underemployment) equilibrium tax rate is 10%. Clearly, given the assumptions, full employment and a balanced government budget are incompatible.*

It is possible, of course, to use the principle of the balanced budget multiplier to secure a full-employment equilibrium which, given the above assumptions and parameters, could be achieved at a level of government receipts and expenditures of \$90 Billions. The only alternative solutions compatible with full employment and a balanced budget are to change the level of investment, the consumption function, or both. A policy of lowering interest rates is relevant in these connections, though one need not recapitulate the voluminous literature on the subject to conclude that interest rate policy is a weak reed, not thought to be sufficiently powerful by itself to achieve the desired ends.

Suppose now that the division of income into consumption and savings for the measurement of the tax liability has some effect on the consumption function, one of the possible alternatives mentioned above. Suppose (though the result is by no means certain) that the effect of a higher rate on savings than on consumption causes a shift in the disposition of income toward consumption and away from saving. That is to say, the consumption function is itself a function of t and u , where

t = rate of tax applicable to consumption

u = rate of tax applicable to saving

Suppose further, for simplicity, that the parameter β (the marginal propensity to consume) now becomes a variable dependent on t and u according to the linear formula $\beta = \gamma + \partial(u - t)$. Where $u = t$, as under the present

income tax, (at least at the margin) the latter term is zero, so that $\beta = \gamma$. If $u > t$, the function states that income shifts away from saving to consumption, with the reverse true for $t > u$. The consumption function may now be rewritten

$$C = \alpha + D[r + \partial(u - t)]$$

but D , disposable income, is national income less taxes, or

$$D = Y - tC - u(Y - C)$$

therefore,

$$C = \alpha + [Y(1 - u) + C(u - t)][\gamma + \partial(u - t)]$$

The simple problem given above may now be restated as follows: given autonomously determined private investment and government spending, what values for t and for u will produce full employment with a balanced government budget. Suppose, as before, that $I = \$50$ Billions, $G = \$50$ Billions, full employment $Y = \$540$ Billions, $\alpha = \$100$ Billions, with the additional parameter values $\gamma = \frac{2}{3}$ and $\partial = \frac{1}{6}$.

The equilibrium full employment, balanced budget national income, with above values substituted, requires that consumption be \$440 Billions, savings \$50 Billions, and taxes \$50 Billions. The required rates t and u may be computed from the consumption function, using the fact that desired disposable income is already known to be \$490 Billions.

$$440 = 100 + 490 [\frac{2}{3} + \frac{1}{6}(u - t)]$$

subject to the second condition that taxes equal \$50 Billions, or

$$440t + 100u = 50 \quad (\text{where } 100$$

= saving before taxes);

approximate solutions are

$$t = .078$$

$$u = .159$$

A tax, then, with different rates for savings and consumption may be used to move the economy here assumed toward full employment without unbalancing the government budget and without departing from expenditure levels thought to be desirable on other grounds, provided only that the consumption function will respond to rate differentials, and in the appropriate direction. In a broader context than these

*For an interesting classification of sets of assumptions leading to different policy conclusions, the reader is referred to Richard A. Musgrave, *The Theory of Public Finance* (New York: McGraw-Hill, 1960), especially Ch. 17. The assumptions, among others, which appear in various combinations are inflexible money wages, the existence of liquidity preference, and wealth effects. Some sets of assumptions produce underemployment equilibria curable only by monetary policy, others (like the present one) amenable only to fiscal policy, and still others amenable to both kinds of policy measures.

highly restricted assumptions, the crux of the matter remains the response of the consumption function to tax rate differentials, whether stated simply as a function of income or more generally as a function of real income, real wealth, (including real balances) and the interest rate.

It may be objected at this point that if the savings-consumption pattern from a given income does not respond to changes in the interest rate, then it would not respond to tax rate differentials either, since the two amount roughly to the same thing: namely, a change in the terms by which present goods exchange for future goods, other things (like prices) equal.³ Indeed, this similarity is no accident; quite likely, it is because investment and consumption will not respond sufficiently in real-life economies to monetary ease that monetary policy alone cannot maintain full-employment, balanced-budget national income in the face of falling aggregate demand.

³ If the time-horizon is taken to be sufficiently short, it is possible for a temporary consumption tax to produce a violent alteration in the ratio at which present goods exchange for future goods, given unchanged net prices. To use Musgrave's example, in a two-period model, a consumption tax of 50% in period one but zero in period two, with interest at 5%, is equivalent to a rate of interest of 110% without tax. *Ibid.*, p. 264.

It should be noted, however, that the longer the time horizon permitted to consumers, the less spectacular is the result. Suppose that a temporary (1 year) consumption tax of 50% is levied, with no tax on savings. Suppose further that the consumer's time horizon is 20 years, so that his choice with respect to a given dollar of income is to spend \$.50 net on current consumption or purchase a \$1 annuity at, say 2% for 20 years, yielding future consumption of roughly \$.06 per year. This is equivalent to an interest rate (on income saved of \$.50 available for untaxed consumption of \$.50) of approximately 9%. This is a much smaller alteration in the effective interest rate, though still larger than that likely to be achieved via any conceivable use of monetary policy.

It should be further noted that if consumption is to be taxed at the same rate in each of the time periods within the consumer's time horizon, then a change in the present consumption tax rate (expected to apply to each future period as well) implies no change in effective interest rates unless a rate applicable to savings is also introduced, which is the present proposal. Further, expectations as to future tax rates become relevant to the nature of the economy's response to the proposed tax. Perhaps by leading consumers to expect appropriate contracyclical rate changes, expectations could have the effect of strengthening rather than weakening the impact of rate changes.

It will be here argued that the impact of a variable savings-consumption tax is likely to be more effective than changes in the rate of interest. First, it is possible to produce via tax rate changes some alterations in the ratios of present to future goods which are rather startling when considered in the light of their effective interest rate equivalents.⁴ Indeed, these changes coupled with interest changes as well, might make a noticeable impact. Second, there is not one interest rate but many; indeed, more broadly, there is a complex pattern of rates of return on wealth (i.e., dividends, interest, and rent) of which the interest rate on a given form of wealth is only one of many. There is, however, only one personal income tax rate or rate structure, notice of which can hardly be avoided. One can despair of getting clear signals from the financial markets, or ignore them altogether. The tax collector is not so easily escaped. Third, a household with a given income may take the line of least resistance given changes in the interest rate, leaving consumption (hence, saving) as before. Should he, however, take the line of least resistance in the face of an increase in the savings tax rate relative to the consumption rate, his inaction plays directly into our hands, for he will maintain consumption, letting the increased tax fall on saving as desired. Inertia undermines the one mechanism; it insures the success of the other.

Fourth, the very worst that can happen is that people will treat the tax simply as an income tax, reducing both savings and consumption as they would have were the same amount of revenue extracted without differing rates. Should part of the community respond in this way, there is always the possibility that the remainder will respond in the desired way, thus, in a recession, raising an equal amount of revenue with a smaller deflationary impact than the present system.

It might be further objected that an explicit savings tax is unnecessary, since a given rate differential could also be achieved with the taxation of income and consumption. This is, of course, true provided that negative taxes on consumption (subsidies) are admissible in cases where it is desired to tax savings at a rate higher than consumption, i.e., in a recession. Should subsidies to producers or sellers of consumer goods be thought undesirable for any of a va-

⁴ See the argument given under note 3 above.

riety of possible reasons, something like the same result could be accomplished by permitting partial deductions for consumption in computing taxable incomes. However, if this approach is adopted, we are again confronted with the necessity of computing a given taxpayer's consumption which, as Kaldor has pointed out, can hardly be accomplished without measuring income and savings, and then subtracting. When it becomes necessary to do this, we are really back to the present proposal.⁸

We now turn to the quite different question as to the measurement of the relevant magnitudes of savings and consumption, and the related matter as to whether such a tax could ever be administered. The same problems were, of course, faced by Kaldor for his proposed expenditures tax. For a more extended discussion, the reader is referred to his recent work.⁹ In brief, if income and either saving or consumption can be measured, the remaining quantity follows from the identity $\text{Savings} + \text{Consumption} = \text{Income}$. The present tax law manages to define income, not easily, but with sufficient precision to serve as the basis for a tax which, by comparative standards, is a spectacular success. Savings can be measured by the addition of balance sheet data, leaving difficult problems only with respect to asset value changes (capital gains and losses) and gifts, each discussed below.

Saving may be defined as the increment in net worth from the balance sheet at the beginning of the year to that for the end of the year, adjusted for special treatment of gifts and asset value changes. Corporations and partnerships are already required to submit balance sheet data, and much property held by individuals is already subject to record-keeping for measuring capital gains and losses, depreciation, depletion, and the like. Requiring balance sheets on personal tax returns is then, an extension of present practices rather than a wholly new departure. Compliance could be facilitated by exempting from the dual rate system (and hence, the filing of balance sheets) taxpayers with adjusted gross income under \$6,000, or whatever may be the appropriate level below which saving is negligible anyway.

The law may be framed so as to reflect any conceptual view of saving; the likeliest view would be that of the national income accounts

in which consumer durables purchases are treated as consumption (thus omitting stocks of durables from balance sheets and so avoiding problems of valuation and depreciation). Related problems posed by capital gains and losses are not as serious as one might suppose at first glance; if they are to be excluded entirely from income, they (consistently) may likewise be excluded from savings and consumption by carrying assets at cost and adjusting indicated savings (read from balance sheet changes) by the amount of realized gains or losses. If one decides that realized gains or losses should be fully included in income, then saving should be measured directly from the balance sheet on which assets are maintained at cost. If, as at present, income is defined so as to include 50% of realized long-term capital gains, one adjusts the indicated savings figure in the same way; that is, by deducting 50% of realized gains. Likewise, if restrictions are placed on the deductibility of capital losses, with carry-forward provisions, the same adjustments may be made in the indicated savings figures.

The only real problem arises in the situation where income is so defined as to include all capital gains, whether realized or not. One would then require that all assets be shown at market value, which does not exist for many assets of taxpayers. However, this is not a problem unique to a dual-rate tax system; it exists in defining income, even without regard to defining saving.

Another problem arises with respect to gifts, which problem may be considered in two parts; gifts received by a taxpayer, and gifts made to others. If the former is thought to be includable in taxable income, there is no problem. It appears both as measured income, and, if saved, as part of year-end net worth. If gifts received are not part of taxable income, then they must also be deducted from savings, consumption, or both. The law could operate on the presumption that gifts are saved, or are consumed, or could permit some allocation. There is ample precedent for an arbitrary determination of such issues.

Gifts made by the taxpayer are handled in a similar fashion. If some gifts are thought to be properly deductible from income, as is now the case, these may also be deducted from indicated savings or consumption. While gifts might presumably be made from income (consumption) or wealth (saving), their treatment as deductions

⁸ Kaldor, *op. cit.*

⁹ *Ibid.*

from saving would produce the maximum contra-cyclical effect. Recession, with relatively higher rates on saving, would encourage giving, hence spending by the recipient non-profit organizations. Other gifts, such as those to persons, are not now treated as deductions from income. The only issue is their allocation as between consumption and saving, which might be arbitrarily done, with the observation that allocation against savings produces the maximum contra-cyclical effect.

The author does not, of course, contemplate the immediate adoption of his proposals. Nevertheless, it might seem appropriate to make a few comments as to the practicality of a dual-rate tax. First, one might observe that if the present Internal Revenue Code, along with the reams of judicial and administrative interpretation, had been presented to the Congress in 1913 it would undoubtedly have been declared impossible and unworkable. Second, the principal additional burden on the taxpayer is the introduction of a balance sheet on his tax return, or at least on those returns over a certain minimum amount of adjusted gross income. If ordinary mortals can get successfully through the present 1040, they can probably list their assets, liabilities, and subtract one total from the other, especially if a realized capital gains concept calling for valuing assets at cost is used. Presumably taxpayers already keep records of costs of stocks, bonds, real estate, and unincorporated business equities for present capital gains tax purposes. They can probably find out, without too much additional trouble, their bank balances, savings and loan shares, mortgage liabilities, and installment liabilities, which items account for the great bulk of remaining personal assets and liabilities.

Another consideration which requires some mention is the matter of timing; one of the virtues of the pay-as-you-go system is the im-

mediate cushioning of the impact of falling production on disposable income, a virtue which ought to be preserved in the dual rate scheme if the maximum contra-cyclical impact is to be attained. This could probably best be accomplished by basing the withholding tables on those rates applicable to consumption; in the event of falling income, rates could be cut as quickly as at present. Since the consumption rate is also likely to be progressive, there would be the same elastic response of revenue to income changes that now prevails with a progressive income tax structure. The resulting temporary deficits would be offset the following April when the full impact of (presumably) higher savings tax rates would be felt.

As a final consideration, several other possible features of the proposed consumption-savings tax may be mentioned. In much of the above discussion, illustrations relate to periods of insufficient aggregate demand, with resulting relatively high tax rates on saving. It would, of course, be possible to extend the same analysis to periods of inflation, with appropriate tax rate levels reversed. The principles may be extended to corporate profits taxes, as indeed the penalty surtax on "improperly accumulated surplus" did. One might, in the case of falling aggregate demand, give credit for real investment (in facilities or inventories) since the real target of the savings tax is saving not matched by real investment. Likewise, households could be allowed credits against the savings tax for newly-produced real assets acquired, which for them would be newly-constructed residences or other buildings. In the same vein, households and firms could be penalized for hoarding money balances by allowing credits against the savings tax for non-cash financial assets acquired, thus helping to drive down interest rates, and possibly even lowering the famous Keynesian "floor."

WORKABLE COMPETITION IN THE SYNTHETIC RUBBER INDUSTRY*

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For over twenty years students of business organization have been trying to define various concepts of workable competition. One of the most important questions remains unanswered: to what extent is the market performance of firms determined by the market structure of their industries? Or, to put the question in a slightly different form: in attempting to judge whether an industry is workably competitive, how should market performance and market structure be weighted? This paper analyzes these problems with reference to the synthetic rubber industry.

The synthetic rubber industry was born during the early days of World War II, when the United States was cut off from natural rubber supplies. Then in 1955, after a long period of negotiations, the industry was sold to private enterprise.² It was delivered into private hands primarily through the "Rubber Producing Facilities Disposal Act of 1953." Perhaps the major aim of this Act was "the development within the United States of a free, competitive, synthetic rubber industry."

The industry offers two unique features to the student of business organization. First, this was the first full-scale industry ever built by the Federal Government in the United States. During the war the Government financed fifty-one plants, representing a capital outlay of almost \$700 million. From a meager production of 8,000 long tons of synthetic rubber in 1941, the industry was capable of producing more than a million long tons annually by the end of 1944.

Second, the transference of ownership of the

rubber producing plants represented the first time in our history that Congress has had the final responsibility for establishing the structure of a private industry. It was against the background of our antitrust laws that Congress had to make its decision.

The first section briefly discusses the concept of workable competition. In the second section, the leading aspects of the synthetic rubber industry's market structure and market performance will be outlined. The final two sections will deal with workable competition in the synthetic rubber industry.

I

A purely competitive industry contains a large number of firms, none of which is able to exert a significant influence upon the market price of its products. A firm within such an industry accepts the price of its inputs, as well as the price of its outputs, as data.⁴ Under these conditions, each firm selects an output level which maximizes short-run profits. As a consequence, long-run profit maximization is also assured. Competition among existing firms, together with the free entry of new firms and the free exit of existing firms, results in maximum economic efficiency throughout the industry and maximizes consumer satisfaction for the economy. Some of the more important results of pure competition are (1) the equality of prices and marginal cost, (2) the equality of factor prices and values of marginal physical products, and (3) the existence of zero pure profit levels.

No industry conforms exactly to all of the conditions and results of pure competition. Nevertheless, it is possible to examine the structure and performance of a particular industry against a background of explanatory hypotheses and to reach certain conclusions concerning the

* This paper is largely derived from the author's dissertation, "Competition in the Synthetic Rubber Industry," deposited in the library of Harvard University in 1959.

² See E. S. Mason, "The Current Status of the Monopoly Problem in the United States," *Harvard Law Review*, June 1949.

³ R. A. Solo, "The Sale of the Synthetic Rubber Plants," *The Journal of Industrial Economics*, November 1953.

⁴ Public Law 205, Act of August 7, 1953. (Hereafter referred to as the Disposal Act.)

⁴ In addition to these necessary conditions, a perfectly competitive industry would require perfect knowledge and perfect factor mobility. See E. H. Chamberlin, *The Theory of Monopolistic Competition*, 7th ed. (Cambridge: Harvard University Press, 1956), pp. 6-7.

degree to which they respond to market forces. Often evidences of competitive behavior can be found in markets in which competition is neither perfect nor pure. The question to be answered in the analysis of any industry, therefore, is how closely behavior satisfies the competitive norm. If the results are deemed satisfactory, the industry may be said to be effectively competitive.⁵

An industry may be designated as workably competitive in at least two other ways. First, an industry may be judged on the basis of the closeness with which the necessary conditions of pure competition are approximated in actual situations.⁶ The main necessary conditions are: (1) a large number of buyers and sellers; (2) the absence of selling costs; (3) the acceptance of product and input prices as data; and (4) freedom of entry and exit. A judgment made on the basis of results might be different from one made on the basis of necessary conditions.⁷

Second, an industry might be judged workably competitive when, even in the absence of acceptable behavior under either criteria listed above, an alternative solution seems neither economically desirable nor legally feasible.⁸ From an economic point of view, an existing market structure might well yield better market results than would any alternative structure. From a legal standpoint, an alternative solution might raise serious questions of "fairness" and "feasibility."⁹ In either situation, public policy might support the status quo.

⁵ J. M. Henderson, *The Efficiency of the Coal Industry* (Cambridge: Harvard University Press, 1958).

⁶ J. W. Markham, *Competition in the Rayon Industry* (Cambridge: Harvard University Press, 1952); and D. C. Hamilton, *Competition in Oil* (Cambridge: Harvard University Press, 1958).

⁷ "These analyses (of necessary conditions) provide valuable narratives which describe the nature of competition within particular industries, but tell little about results. The extent to which actual results deviate from those of perfect competition may not be directly related to the number of non-competitive practices that can be listed, since the effects of one practice might offset those of another, and the same practice can cause quite different results under different circumstances." Henderson, *op. cit.*, p. 4.

⁸ R. B. Tennant, *The American Cigarette Industry* (New Haven: Yale University Press, 1950); and Markham, *op. cit.*, p. 204.

⁹ K. Brewster, "Enforceable Competition: Unruly Reason or Reasonable Rules," *American Economic Review*, May 1956, pp. 482-89.

II

The most important conclusions regarding the market structure and market performance of the synthetic rubber industry may be summarized as follows:

Market Structure

(1) In terms of production capacity the synthetic rubber industry is an oligopoly. The four-firm concentration ratio for the general purpose rubber¹⁰ producers is 62 percent, representing a slight increase over the 1955-59 period. This overstates, however, the concentration of sales passing through the actual market, since the largest producers are also the most fully integrated. Nearly 51 percent of domestic SBR sales are "captive," representing either intercompany transfers or sales to affiliated or constituent companies (see Table I).

In the case of the three special purpose rubbers, concentration is high. Butyl is produced in two plants owned by Humble Oil & Refining Co., an affiliate of Standard Oil Co. (N.J.). Neoprene is made only at two plants of the duPont Co. Nitrile rubber is produced by five producers—the major rubber fabricators (Goodrich, Goodyear, U. S. Rubber, Firestone) and International Latex.

(2) The principal sellers in this market—a market which is segmented—are producers which have plants in three major areas: West Coast, Texas-Louisiana Gulf Coast, and the Northeastern belt. Buyers in the market include rubber fabricators, foreign purchasers, and jobbers. Most sales, however, are made either directly by producers to industrial users or through producer sales organizations. Sales contracts and partial requirements contracts are common.

(3) The market for nonintegrated shipments is not formally organized. Information on

¹⁰ There are two major classifications of synthetic rubber. (1) General purpose rubber (Styrene-Butadiene Rubber: SBR), developed to replace natural rubber in major uses, accounts for nearly 82 percent of total synthetic production. (2) Special purpose rubbers (Butyl: IIR, Neoprene: CR, and Nitrile: NBR), developed to replace the natural product in certain uses, account for the remaining 18 percent. In the past three years a third major type, synthetic natural rubber, has been developed. This rubber has the same unit structure as the natural rubber hydrocarbon. To date, synthetic natural rubbers are not distributed on a wide basis.

TABLE I
SBR CAPACITY AND DOMESTIC SALES, 1959

	Percentage of capacity	Percentage of total domestic sales ^a	Percentage of domestic sales			
			Intracompany transfers	Affiliated or constituent companies	Big five rubber companies ^b	All other companies
Goodrich-Gulf	18.4	11.8	—	8.9	0.1	2.8
Goodyear	18.2	20.0	12.2	—	0.8	7.0
Firestone	15.6	17.9	10.4	—	0.2	7.3
Texas-U. S.	9.6	10.2	—	8.0	0.4	1.8
Phillips	8.2	7.2	—	—	1.2	6.0
Shell	7.0	7.1	—	—	3.5	3.6
Copolymer	6.4	9.0	—	6.0	1.4	1.6
A. S. R. C.	5.1	5.0	—	2.9	0.7	1.4
United Rubber	4.7	5.5	—	—	1.4	4.1
General	3.6	4.2	2.5	—	1.2	0.5
U. S. Rubber	2.2	1.8	0.5	—	0.1	1.2
All others ^c	1.0	0.3	0.1	—	—	0.2
Total	100.0	100.0	25.7	25.8	11.0	37.5

^a Excludes domestic resale of purchased rubber.

^b Excludes intracompany transfers and sales to affiliated or constituent companies.

^c Includes Dewey & Almy Chemical Division, W. R. Grace & Co., and International Latex Corp.

Source: *Fifth Report of the Attorney General on Competition in the Synthetic Rubber Industry* (Washington, D.C.: U. S. Government Printing Office, 1960), pp. 14, 20.

prices is disseminated by individual producers and by way of trade journals. As a result, there is considerable scope for independent action on the part of competitors.

(4) Entry into the synthetic rubber industry is free from artificial restraints. Economies of scale are not so large relative to domestic market demand as to preclude the existence of a considerable number of optimum-size plants. The Disposal Commission was apparently successful in making sure that all SBR plant purchasers received needed patent licenses, and new entrants have experienced no difficulty in this connection.¹¹ No restraints on the access to raw materials have been uncovered. As for the channels of distribution and access to the final con-

sumer, neither vertical integration nor the development of brand preferences has progressed so as to foreclose the market to the potential competitor. With entry free from artificial restraints, persistent and flagrant monopolistic behavior is unlikely. At the same time, the threat of rapid entry in response to short-term departures from competitive behavior is small.

However, for the nonintegrated outsider, entry is difficult. Within the past five years, three producers entered the industry. All three are large rubber industry producers. Two, Firestone and General, are members of the "Big Five" rubber companies and were the last of this group to enter into synthetic rubber production. The third, International Latex, is a large fabricator of latex rubber producers. These entrants had their own distribution channels, were fully integrated concerns, and even more importantly, had intracompany markets for their product.

(5) Rubber, being a producer's good, has a derived demand. Historically changes in rubber prices have had little effect upon the quantities of rubber consumed by industry. General economic conditions that influence the purchase of consumer goods, particularly automobiles, de-

¹¹ The one patent case, initiated in 1957, was recently settled in court. On June 9, 1960 the District Court for the District of Columbia ruled that General Tire & Rubber Co. was entitled to a product patent on tire treads made of high viscosity oil-extended synthetic rubber. Most SBR producers are now making such a product and are now foreclosed from purchasing and using this rubber for treads unless they enter license agreements and pay royalties to General. As General's claim is widely disputed in the industry, a series of patent infringement suits can be expected before the matter is finally resolved.

termine how much rubber will be purchased annually.

In the rubber market, synthetics and natural rubbers are almost complete substitutes. The relative prices and qualities of these two materials are all important. During the past five years, synthetic rubber has enjoyed a marked advantage on both points. Synthetics can be made to meet precise specifications; natural rubber quality is far from uniform.¹² Since 1955, the price of synthetic rubber (SBR) has ranged from a low of 2½ cents to a high of 25½ cents a pound below the price of natural rubber. As a result of advantages both in quality and price, synthetic rubber now accounts for 66 percent of the domestic new rubber market.¹³

Market Performance

(6) By the usual definition synthetic rubber prices are administered—they do not move to equate short-run supply and demand conditions. Complete price stability has characterized the past five years, despite a change from a seller's to a buyer's market and a drop in output during 1958. Only one attempt has been made to change the base price structure. On May 1, 1956 Goodrich-Gulf increased its delivered base price for SBR. However, when other domestic producers failed to follow suit, the increase was promptly retracted and customers who purchased rubber at the increased price received refunds.¹⁴

(7) Seasonal and irregular fluctuations in monthly sales are absorbed by inventory adjustments. Production schedules lag demand changes by three or four months. Moreover, total unit costs increase sharply as output decreases below total capacity. A 25 percent re-

duction in SBR output for a plant with a 30,000 long ton rated capacity results in a rise of total unit costs of 14 percent.¹⁵

(8) The behavior of the price and output series strongly suggests that synthetic rubber producers place a higher premium upon short-run price stability than they do upon short-run profit maximization. And these facts, taken in connection with the industry's adoption of the Government's pricing policy based upon costs of production, indicate that the observed price behavior conforms to the kinked demand curve theory. This is reinforced by the small number of sellers, each selling an undifferentiated product, which suggests price uniformity. Throughout the period under consideration, no evidence of persistent deviations from published price lists have been found.

(9) There is no evidence that the industry is subject to chronic excess capacity. Synthetic rubber demand has experienced a rapid rate of expansion. Producers have shown no reluctance in expanding capacity or in building new capacity in line with demand increases. This also indicates that flexible prices are not too important for the maintenance of capacity utilization, which is fully consistent with the relatively inelastic nature of the industry's demand.

(10) Progressiveness has been persistent and improvements have not been noticeably retarded.¹⁶ While prices have been held constant, buyers are receiving a higher quality product. Equally important synthetic rubber innovation has had at least three effects upon competition within the industry; the range of synthetic rubbers has increased, resulting in new markets; rivalry between the various types of synthetics has been intensified; and service competition heightened. These factors constitute a potential source of uncertainty within the industry and

¹² During the Korean War, when all natural rubber purchases were made exclusively by the Federal Government, it was possible to analyze all imports on a quality basis. After extensive analysis, it was found that 41.6 percent of all natural rubber imported into this country in 1951 was of a quality below the grade contracted. In addition to upgrading, sloppy packing by some overseas shippers has also represented a major point of contention between rubber importers and Far Eastern suppliers. Rubber Manufacturers Association, Inc., *Annual Report 1952*.

¹³ C. F. Phillips, Jr., "The Competitive Potential of Synthetic Rubber," *Land Economics*, November 1960.

¹⁴ Some price changes have occurred in various categories of synthetic rubber.

¹⁵ *Chemical and Engineering News*, July 24, 1950, p. 2509, and House Committee on Armed Services, *Hearings on Disposal of Government-Owned Synthetic Rubber Producing Facilities*, 84th Cong., 1st Sess. (Washington, D.C.: U. S. Government Printing Office, 1955), p. 993.

¹⁶ Polymer research has resulted in a continuous flow of new synthetic rubber types. Among these developments are urethane, fluoroclastomers, and synthetic natural rubbers. The range of synthetic rubbers also has increased, as over twenty new categories of the general purpose rubber have been put on the market.

make it impossible for any producer to take his market position for granted.

(11) Available data indicates that SBR producers have been earning a net return of 5 to 8 percent on their investment. In view of the growing nature of the industry this level does not seem excessive. Moreover, in connection with a lack of persistent rationing or excess capacity, the relative stability of these profit rates indicates a favorable rate of investment. Data on the growth rate of individual firms does not contradict the suggestion of independent action on the part of synthetic rubber producers.¹⁷

III

Do five years of private ownership indicate that the leading objective of the 1953 Disposal Act—"the development within the United States of a free, competitive, synthetic rubber industry"—has been achieved?¹⁸ No definitive answer can, or will, be given. The period under consideration is too short to make any but tentative conclusions. But from the characteristics summarized in the preceding section, the author is of the opinion that workable competition is found in the industry.

The structure of the industry departs markedly from the necessary conditions for pure competition. There are a relatively small number of buyers and sellers; producers have control over their product prices and, to a lesser degree, over their input prices; selling costs, while small, are present; and entry (and exit) is difficult.

Market structure, in this industry, offers little basis for predicting market performance. Our examination of the latter leads to the conclusion that, with the noticeable exception of the lack of price competition, the industry's performance has been in accordance with the standards of

workable competition: profit rates have not been excessive; chronic excess capacity nonexistent; selling costs have averaged a small percentage of total costs; the scale of firms falls within the optimum range; and there has been no persistent lag in the adoption of product or process innovations.¹⁹ On these counts, the synthetic rubber industry's market performance would probably be rated as workable.

Furthermore there are at least four offsets to the lack of price competition. First, there is evidence that producers have exhibited considerable independence in achieving the above mentioned performance results. The substantial growth in SBR rubber capacity has been accompanied by a broadening in the base of capacity in the industry. Market shares and positions have shifted during the past five years. While there has been some increased concentration in the collective share of the market held by the three leading producers, their share of production actually sold has remained relatively constant. Whatever increases these firms have experienced have been at the expense of other large companies, as the industry's smaller firms have generally strengthened their positions. This behavior is more readily associated with independent action than with collusion.

Independent rivalry is further indicated in the improvement and extension of technical services, the introduction of freight allowances or equalization, the improvement of existing grades, and the addition of new grades of synthetic rubbers. Competition for customers has continuously increased, aided by the transition to a buyer's market and the entry of new producers into the industry.

The second offset is closely related to the first: the conditions of entry. With entry relatively free from artificial restraints, monopolistic behavior is *a priori* unlikely, even in oligopolistic industries. Although entry into the synthetic rubber industry is difficult, the main barriers are economic in nature, closely related to efficiency and progressiveness. Entry has occurred and these new firms have successfully gained respectable shares of the market from existing producers. More importantly, there is no indication that these new competitors were con-

¹⁷ From 1955-1959, SBR capacity rose 85.4 percent. Despite the facts that the top three firms in 1955 retained their position in 1959 and slightly increased their percentage of total industry capacity, shifting in relative standings among the other firms has continuously occurred and three new producers have entered the industry. Equally important, all producers have shared in the industry's expansion.

¹⁸ The Disposal Act also contained a national security objective. With synthetic rubber now accounting for over 66 percent of domestic new rubber consumption and with total capacity of nearly 2 million long tons, it is here assumed that this objective has been fully met.

¹⁹ See J. S. Bain, "Workable Competition in Oligopoly: Theoretical Considerations and Some Empirical Evidence," *American Economic Review*, May 1950, p. 37.

fronted with either higher average costs or with retaliation by existing firms.

The rate of technological innovation provides the third offset. Mason has written that one should be cautious in attributing monopolistic significance to size of firm, share of the market, pricing formulae, and the like in markets subject to active innovation.²⁰ This is true because progressiveness is an end in itself, often requiring a measure of protection from a competitive forcing of prices to short-run marginal costs. In addition, progressiveness provides longer term fluidity within which oligopolistic rapport is difficult to establish and maintain. This seems to be true in the case of the synthetic rubber industry.

Moreover the industry's record of innovation has had beneficial results upon competition. While prices have remained stable, consumers have constantly received a higher quality product. In turn, producers have aggressively sought both new customers and new markets for their product. Nor is there any indication that the present rate of innovation will slacken in the foreseeable future. Rubber fabricators have a direct interest in maintaining and improving synthetic rubber quality. That this goal has largely been achieved is shown by the high degree of interchangeability which presently exists between synthetics and natural. The desire to be freed from dependence upon foreign sources of supply for natural rubber has also led to the rapid development of synthetic natural rubbers.

The demand for synthetic rubbers is closely geared to the price of natural rubber. Rubber experts state that efficient rubber estates can produce at a profit with a price between 12 and 15 cents per pound. Historically production costs have had little relation to natural rubber prices—world supply and demand conditions are controlling. But it is generally believed that the development of synthetic rubbers will tend to stabilize natural rubber prices. In addition, natural rubber producers are showing an increasing awareness of this situation and future technological developments are almost certain.²¹

Finally, there is a fourth factor which has

relevance to the industry. From a welfare standpoint there are definite advantages to synthetic rubber price stability. For rubber fabricators price instability is a cost. Prior to the commercial development of synthetic rubber these rubber buyers were at the mercy of a wildly fluctuating price for natural rubber and, in large measure, their gross profit margins were outside of their control. Under perfect competition hedging by speculators would tend to remove or reduce price fluctuations. Even with synthetic rubber, however, the lack of an organized market and varying product grades seem to prevent hedging. As a result price stability depends upon producer's actions.

Nor is there any indication that prices have been set unduly high by synthetic rubber producers. In fact, the opposite conclusion is warranted. Given that synthetic rubber is a relatively new product, producers are trying to develop new uses. The history of competition of natural products with synthetically derived products is replete with examples which show that the introduction of synthetic materials often expands the area of consumption and creates new markets. For synthetic rubbers, price stability is a major factor which makes this possible. Not only must man-made rubbers be able to withstand competition from natural rubber, but they must be competitively priced for enlargement of the twilight market which exists between rubber and plastic materials.

Therefore, the lack of price competition cannot be considered as a major factor in assessing the workability of competition within the industry. Rivalry has been aggressive, due in large part to the high rate of technological innovation which has characterized the industry.

Bain has suggested that within concentrated markets there may be an association between market structure and the workability of competition. He offers three hypotheses, of which the second is as follows:

2. Oligopolies with moderately difficult entry and moderate concentration—probably a common case. In general, markets of this sort promise the closest approximations to workability among oligopolies, provided that there is not persistently 'destructive' pricing, which seems theoretically unlikely as a long-run tendency. Efficiency should be reasonably good and prices and profits low or moderate. With product differentiation, however, selling costs may be excessive; thus standardized-product industries

²⁰ E. S. Mason, "Schumpeter on Monopoly and the Large Firm," *Review of Economics and Statistics*, May 1951, pp. 139-44.

²¹ See D. M. Phelps, *Rubber Developments in Latin America* (Ann Arbor: Michigan Business Studies, XIII, 1957), especially chapter VII.

within this category get the best rating. Fewness of buyers may help, provided buying power is not overwhelming.¹¹

Under Bain's hypothesis the synthetic rubber industry would come close to the most acceptable structural rating. Moreover this seems to summarize the workability of competition in the industry: entry is difficult, concentration moderate, and product differentiation minimal. Yet, market performance leaves little to be desired.

IV

Three tests of an industry were previously mentioned. They were: (1) Do the industry's results approximate the theoretical results of pure competition? (2) Does the industry approximate the necessary structural conditions for pure competition? (3) Does any alternative market organization seem economically desirable or legally feasible? Our conclusion is that the synthetic rubber industry meets the first, but not the second. As this is the case, we must necessarily consider the third.

Any type of market structure which might be set up in place of the present oligopoly would show some kind of imperfections. Three alternative market structures seem possible. The present firms might be consolidated into one to form a complete monopoly. The two multi-plant firms (Goodrich-Gulf, Texas-U.S.) might be split into somewhat smaller segments so that a few more firms appeared in the market. Or, finally, the industry might be returned to Government ownership. While pure competition is unattainable, the results of each of these alternatives differ and will be briefly discussed in turn.

The most serious drawback to a monopoly is a possible lack of incentive. It may be that a single enterprise deprived of the stimulus of competitive activity would be less efficiently run and would care for the wants of buyers less carefully than do the present companies. Our study has shown that rivalry presently exists in the synthetic rubber industry and that technological innovation has been high. Some of these qualities are more than likely to spill over into other parts of the firm's activities and lead to a better conduct of affairs than would occur in a full monopoly. Unless this doubt could be re-

moved, there is no assurance that a full monopoly would be economically superior to the existing organization.

With a few more firms oligopoly relationships would persist and the current situation would be changed more in appearance than in fact. Oligopoly theory would indicate that as the number of firms within an oligopolistic industry increased, the opportunities for explicit (and tacit?) agreement would diminish. But given a kinked demand curve and the high degree of competition existing within the synthetic rubber industry at the present time, it is doubtful whether such a structure would result in different behavior.

At the same time it must be remembered that the two multi-plant owners included three big rubber companies. Such divestiture would thus add two strong buyers to the market by forcing these companies to purchase at least a part of their annual synthetic rubber supplies through the market. However, it is not obvious that this would result in improved performance. No price discrimination has been found and integration has not resulted in a foreclosure of the market. But again, this would be perhaps the most significant market structure alteration and would increase the necessary structural conditions for pure competition. Any public action, such as antitrust, aimed at forcing such an alteration, would face two problems: the industry's performance has been good and the pricing structure a direct inheritance of the period of Government operation. In this sense, the legal feasibility, at least for the present, of any public action would seem very small.

Of course, there is a third public policy available: nationalization. At the outset, one would hesitate to try to sell such a policy to the political and industrial leaders who went through the long period of negotiations during the post-war period. Even more serious, however, is the probable lack of incentive for research and development. At least one student of the industry has argued that the Government-sponsored research program during and following World War II left much to be desired.¹²

¹¹ Bain, "Workable Competition in Oligopoly: Theoretical Considerations and Some Empirical Evidence," *op. cit.*, p. 46.

¹² R. A. Solo, "Synthetic Rubber: A Case Study in Technological Development Under Government Direction," Study No. 18 of the Senate Subcommittee on Patents, Trademarks, and Copyrights (Washington, D.C.: U. S. Government Printing Office, 1959).

The present organization of the synthetic rubber industry thus appears in a favorable light when compared with possible alternative market structures. Pure competition is unattainable. A full monopoly might lack adequate incentives to maintain quality. Market forces indicate that the addition of two independent firms by divestiture would have little effect upon the industry's performance. And nationalization seems unfeasible. On economic grounds there does not seem to be a strong case for reform in the structure of the industry.

v

The lack of necessary conditions, however, raises serious questions about the future course of the industry. Past behavior contains no guarantee of the future. The industry possesses a relatively inelastic demand and an oligopolistic market structure. Such characteristics in other moderately concentrated industries have provided heavy pressure toward less independent action. To date the synthetic rubber industry has also been characterized by three other factors which have outweighed the above: a steady growth in demand, a rapid rate of technological innovation, and severe pressure from natural rubber producers. These seem to be necessary and sufficient conditions for workable competition in this industry.

It seems unlikely that the domestic rate of growth for synthetic rubbers will continue at its 1955-59 pace. However there are indications that a stabilized demand is still distant. The future of technology is even more speculative, but polymer chemistry seems to be far short of being an exhausted field. Moreover, present indications suggest that the pressure from natural rubber producers will increase, not diminish, to say nothing of competition from the plastics industry. On balance, it would seem very unlikely that the synthetic rubber industry would develop the type of performance commonly associated with other oligopolistic markets within the foreseeable future.

The heavy emphasis upon performance raises two policy problems, both of which concern the disposal program of 1955. First, a more competitive market structure might have been achieved if Congress had been willing to accept a lower revenue from the sale of the producing plants.²⁴ While our study indicates that market

performance would not have been significantly affected by an alternative market structure, a more competitive structure would serve to insure a continuation of rivalry in the future. Second, and as a corollary problem, Congressional approval of two joint venture companies is open to question. All of the companies involved could have purchased plants alone. Moreover, those companies who were unsuccessful in buying Government plants might well have entered the industry at a later date via entry. From a competitive standpoint, the wisdom of joining together large industrial firms is always suspect. At least in the synthetic rubber industry the net effect seems to have been to increase market power without any offsetting factors, such as greater performance.

Returning to our earlier question, then, our study leads to the conclusion that the synthetic rubber industry is workably competitive. But in making this evaluation it must be stressed that a large element of personal judgment has been involved. On the basis of the evidence examined, others might well reach quite different conclusions.

One final consideration: These findings have some methodological implications for the study of industrial behavior. In recent years, economists have been concerned with the problem of how to weight performance as opposed to structural standards. In a number of cases, the choice is either structure or performance, but not both. In this industry it is clear that the findings depend upon the weighting system adopted. In part our preference for market performance is pragmatic—given our institutional constraints, no alternative market structure seems feasible.

Yet, from a political point of view, structural standards are to some extent more basic. Competition is desirable because it insures that the market will direct industry rather than give market power to individual firms and our society has always been concerned about uncontrolled private power. Others have argued that

achieved by postponing disposal for two or three years. Such a conclusion is warranted because the future of synthetic rubbers was still uncertain in 1955 and this accounts, in large part, for the lack of competitive bidding for some of the producing plants. See Rubber Producing Facilities Disposal Commission, *Report to Congress* (including Supplement), January 1955 (Washington, D.C.: U. S. Government Printing Office, 1955).

²⁴ Conversely, this same result might have been

competition is a political as opposed to an economic concept. On this basis the synthetic rubber industry might well be rated as not workably competitive.

Given the highly desirable performance, however, combined with the high rate of technological innovation, and the entry of three new producers since 1955, the synthetic rubber in-

dustry does give reason for accepting the conclusion that the industry is workably competitive, despite its market structure. The industry stands on its own feet, receiving neither tariff protection nor subsidies. A workably competitive industry guarantees that the public interest will be served. Such results lead to the conclusion that Congressional intent has been realized.

WAGE-PRICE POLICIES UNDER PUBLIC PRESSURE*

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Wage-price policies of industry are the result of a complex of forces—no single explanation has been found which applies to all cases. The purpose of this paper is to analyze one possible force which has not been treated in the literature, but which we believe makes a significant contribution to explaining the wage-price behavior of a few very important industries. While there may be several such industries to which the model of this paper is applicable, the authors make particular claim of relevance to the explanation of the course of wages and prices in the steel industry of the United States since World War II. Indeed, the apparent stiffening of the industry's attitude in the recent steel strike has a direct explanation in terms of the model here presented.

The model of this paper considers an industry which is not characterized by vigorous price competition, but which is so basic that its wage-price policies are held in check by continuous critical public scrutiny. Where the industry's product price has been kept below the "profit-maximizing" and "entry-limiting" prices due to fears of public reaction, the profit seeking producers have an interest in offering little real resistance to wage demands. The contribution of this paper is a demonstration of this proposition, and an exploration of some of its implications.

In order to focus clearly upon the operation of this one force, which we may call the effect of "public-limit pricing" on "key" wage bargains, we deliberately simplify the model by abstracting from other forces, such as union power, which may be relevant in an actual situation. For expository purposes, this is best treated as a model which spells out the conditions under which an important industry af-

ected with the public interest would find it profitable to raise wages even in the absence of union pressures for higher wages.

Part I below describes this abstract model by spelling out its assumptions. Part II discusses the operation of the model and derives some significant conclusions. Part III discusses the empirical relevance and policy implications of the conclusions. Part IV is a brief summary. The Mathematical Appendix presents the rigorous argument, but is best read after Part I in order that the assumptions underlying the equations may be explicit.

I. THE ASSUMPTIONS OF THE MODEL

A. The Industry

The industry with which this model is concerned is a basic industry, producing a substantial share of gross national product. Price competition is lacking. For the purposes of setting the product price, the industry behaves as a single entity. In wage negotiations, the industry bargains as a unit with a single union.

B. The Demand for the Industry's Product

We are concerned with aggregate demand for the industry's product. The manner in which this is shared among firms is taken as given. In any given time period, the aggregate demand for the industry's product is determined by two things: the price charged by the industry, and the level of GNP. For the purposes of this discussion, the problem of relative prices is encompassed in these two variables, since GNP includes other prices. (We abstract here from technological progress and assume that prices of all other products change proportionately.)

The form of the industry demand function is one which makes quantity demanded vary inversely with the product price, and vary directly with the level of GNP.

* The authors gratefully acknowledge the constructive criticisms of a previous draft of this paper by Professors Jack Johnston and Peter O. Steiner.

C. Industry Product Price Policy

The industry of this model is so important that its wage and price policies are affected with a public interest. Because of its importance, and because the lack of price competition is well recognized, the industry is under considerable public pressure not to raise its price any more than could be justified by cost increases. The threat of effective anti-trust action, provoked by "gouging the public" through price increases not justified by cost increases, and fears of endangering relations with customers, Congress, the general public and the press, all operate to keep price increases in some relation to cost increases. For the industry of this model, the effect of such public pressures in the past has been to hold the price well below the short-run profit-maximizing price (given the wage rate and the level of GNP), and even below the entry-limiting price (but not below average cost).

For such an industry, it is only "safe" to raise its price if such an increase is manifestly "justified" by rising costs (due to rising wages, etc.). Thus, if public pressure sets the effective limit to the price that the industry may charge, this pressure is itself a function of the wage rate. In this model, we abstract from all non-wage sources of cost changes, so that the "public-limit price" only rises as the wage rate rises. In such circumstances, it may well be to the advantage of the industry to allow an increase in the basic wage rate.

Since marginal costs rise when the wage rate rises, the profit-maximizing price also rises when the public-limit price is elevated, and is likely to remain well above the latter. The entry-limiting price will also be raised for potential domestic competition, but unless general inflation permits profit margins to increase proportionately throughout the economy, we might expect the public-limit price to approach the entry-limit price. The foreign-entry-limit price would be approached more rapidly, since domestic wage-rates do not enter foreign costs directly. Where this approach becomes critical, the industry can be expected to put much emphasis on this as evidence of its sincerity in "resisting" the wage pressures of a powerful union, requesting tariff relief after it has "reluctantly" acceded to the union pressure.

Whether or not it is in the industry's interest to allow the basic wage rate to rise obviously

depends upon the extent to which the public-limit price rises in response to a basic wage increase, and the relation of this response to the increase in costs accompanying the wage increase. The extent to which the public-limit price is raised by a given increase in the basic wage rate is itself a function of three things: the passage of time, the level of GNP, and the size of the wage increase.

We are abstracting from the fact of strikes here, but it should be obvious that the extent to which the public-limit price is raised by a given increase in the basic wage rate is also a function of the show of resistance put up by the industry. The industry may deliberately take a strike, not to put pressure on the union, but in order to "educate" the government and the customers of the industry. As a strike continues, these parties increase their pressure on the industry to reach an agreement. They become increasingly willing to accept the price increase that the industry claims the wage bargain would entail.

Public indignation and resistance to wage-price increases is obviously much less when the increases are on the order of 3% per annum than when the increases are on the order of 3% per month. The simple passage of an additional eleven months' time makes the second 3% boost more acceptable. Thus, the public-limit price is raised further by a given wage increase the longer it has been since the previous price increase. Notice, however, that the passage of time does not permit the raising of prices *per se*, without an accompanying wage increase. Similarly, higher levels of GNP do not, in themselves, provide grounds for raising prices, but they do relax some of the pressure on the industry so that it can raise prices higher for a given wage increase. This is not extended to anticipated levels of GNP, however—only the current level of GNP affects the public pressure against wage-price increases. Finally, since the public requires some restraint on the part of the companies, larger wage increases call for less than proportionately larger price increases (e.g., if a wage increase of 5% allows a price increase of 7%, a wage increase of 10% allows a price increase of something less than 14%).

D. Industry Costs

We assume that average total unit cost in the relevant region of operation is constant with

respect to quantity produced (the average cost curve is horizontal, and therefore is identical with the marginal cost curve), and is the same for every firm (and therefore for the industry). The level of this average cost is determined by factor prices, technology, and so forth. As we have noted, however, we are abstracting from changes in all determinants of this level except for changes in the wage rate. The level of average cost (equal to marginal cost) is thus strictly a function of the wage rate.

E. Union Policies and Collective Bargaining Issues

The single union which faces the industry does not restrict its membership, and there is an adequate supply of labor available to the firms of the industry at the going wage rate. The union does not regard unemployment of its own members as a matter of concern when setting its own wage policy—its concern with employment makes itself felt in pressure upon the government to maintain full employment.

The union vigorously demands wage increases from productivity increases, and wage increases to offset cost-of-living increases, but we abstract from these forces here. For our present purposes we assume that the sole subject of bargaining is the basic wage rate (not including productivity improvement factors or cost-of-living adjustments), and it is this basic wage rate which determines the level of costs. Productivity is something of an amorphous concept and the amount of productivity increase in a given time period is not even well known to the industry, much less to the union or to the public. Disagreement on the amount of productivity increase exacerbates the problem of agreeing how an increase in profit margins related to a productivity increase should be shared. The existence of conflict and of vigorous union demand for an increase in money wages does not contradict the assumption that the union is willing to settle for cost-of-living and productivity-share increases as distinct from a cost-raising increase in the basic wage rate.

We assume further that the union recognizes the possibility that price-level increases may offset wage-rate increases, and it does not entirely disregard the effect of price increases arising from its own wage increases upon the "real" wage rate. For internal political reasons, the union asks for (and accepts) increases in

the basic wage rate, and would vigorously oppose a reduction in this rate, but the adjustment of the basic wage rate upwards is essentially up to the discretion of the companies of the industry.

Changes in the basic wage rate are cost-raising, and they constitute an argument for raising prices. However, it is not known to either the union or the public precisely how much of a cost increase is caused by a given change in the basic wage rate, although the companies are presumed to have reliable estimates of this magnitude.

In this model, then, the industry is presumed to realize that they could successfully resist a change in the basic wage rate, but since such a change is the only effective means to raising prices they may, in circumstances to be spelled out in Part II below, find it to their advantage to allow the wage rise. Thus, for non-negative changes in the basic wage rate, the industry becomes the active wage-setter, since any increase in the basic wage rate can occur only by reason of industry acquiescence. The presumption in the literature would appear to be that the basic wage rate would be unchanged in this case, on the grounds that it is "clearly" not in the interest of the industry to raise wages gratuitously. From this presumption it is an easy step to the conclusion that any observed increases in the basic wage rate must be due to union behavior different and more aggressive than assumed in our model. It is this conclusion that we challenge; we do so by disproving the presumption on which it is based.

II. THE OPERATION OF THE MODEL

It is convenient to assume that the union-industry contract is of one year's duration. We also assume that there is no possibility of voluntarily reopening the contract during its life, so that all bargaining takes place at one year intervals. In this part we consider the behavior of a profit maximizing industry operating under public pressure price-restraints as outlined in Part I above.

A. The Wage Bargain: Single Period Horizon

In this section, we consider that the industry wishes to maximize its joint profit for the coming year only. The more distant future exerts an influence solely by making the public pressure restraints effective: the industry price will

not exceed the public-limit price. In these circumstances, the industry estimates what the forthcoming GNP will be, in order to estimate what the demand for its product would be if its price remained unchanged. Then its profit for the coming year can be computed.

A change in this level of profit can only occur by reason of a change in the wage rate. The industry can choose any non-negative change in the wage rate. The change that is chosen is the one which will maximize the profit of the coming period.

An increase in the basic wage rate increases both average cost and the public-limit price. The increase in the public-limit price tends to reduce the quantity demanded, however, so that an increase in the wage rate apparently will not increase profits unless the public-limit price increases somewhat more than does the level of average cost. Ruling out the possibility of a vertical or positively sloped demand curve, there is still one circumstance which makes a wage increase profitable despite the price being raised by less than average cost. The industry is so large and important that it cannot neglect the effect of its wage-price policies on the level of GNP. This effect on GNP depends only in part on the effects of the industry's prices and wages on costs and demands in the rest of the economy, including the pattern effect of "key" wage bargains. The level of GNP is also affected by the monetary and fiscal policies set by the government. In estimating the effect of the wage increase upon GNP, therefore, the industry must take the current and probable future policies of the Federal Reserve and treasury into account. We first develop the general case, and then two special cases of particular interest.

(1) *The General Case.* In general, the industry must estimate the effect on the quantity sold which will result from an expected change in GNP. This change in the quantity sold times the profit margin (price minus average cost) may be called the "marginal net return of an increase in GNP." Aside from changing the level of GNP, the wage increase changes total revenue and total cost by increasing price and average cost, and by decreasing quantity in both cases. These effects we label, respectively, the "marginal revenue from an increase in the wage rate," and the "marginal cost of an increase in the wage rate." "Marginal profit" from an increase in the wage rate is then equal to the

marginal net return of an increase in GNP times the rate of change of GNP induced by an increase in the basic wage rate, plus the marginal revenue from an increase in the wage rate, minus the marginal cost of an increase in the wage rate. If this marginal profit is less than or equal to zero, the industry will choose not to increase wages.¹ If the marginal profit from an increase in the basic wage rate is positive the industry has an incentive to allow the wage rate to rise. The greater the increase in the wage rate, however, the smaller becomes the increase in the public-limit price that is associated with a further wage increase, so that marginal revenue falls.

It may be that marginal revenue from a further wage increase falls so gradually that the industry price approaches the entry-limiting or pure profit-maximizing prices. If the public-limit price is to continue to be the effective restraint, however, the marginal revenue will fall rapidly and the marginal profit become zero before these other prices are reached. In this case, the first order condition for profits to be maximized under conditions of effective public-limit pricing is that the industry will allow the wage rate to increase until the marginal profit from a further wage increase falls to zero.

(2) *The Case of Complete Restraint.* Where the monetary and fiscal policies of the government are such as to prevent an increase in wages and prices from causing further increases in GNP, the industry anticipates that the rate of change of GNP induced by a change in its own wage rate is zero. In this case the marginal profit reduces to marginal revenue from an increase in wage rate minus the marginal cost of an increase in the wage rate. As would be expected, it can be shown that the industry will, in general, choose to raise wages less under such conditions of monetary-fiscal restraint than if the industry expected that GNP would be allowed to increase.

(3) *The Case of Permissiveness.* In this case the industry expects that a complete full-employment policy will be followed by the authorities. Abstracting from technological change, this means that the industry expects GNP to increase by whatever amount is necessary to pre-

¹ For exposition of the second order conditions, which we assume are being met, refer to the appendix, equation (22) and the accompanying discussion there.

vent quantity sold from falling for this important industry. This is the case in which industry and union are completely "bailed out" by the monetary-fiscal authorities. The first order condition of profit-maximization subject to the public-limit price side restraint reduces very neatly in this case: the industry will increase wages until the rate of change of the public-limit price as wages increase falls to equality with the rate of change of average cost as wages increase.

B. The Wage Bargain Over Time

There are two aspects of the wage-price bargain over time that are worth considering. First, we shall consider the course of the settlement over time where the industry operates with a single period time horizon. Second, we shall consider the effects of a multiple-period horizon on the course of the settlement over time.

(1) *Dynamic Change with a Single Period Horizon.* The analysis thus far has provided an explanation of why the industry might be willing to allow a wage increase up to a certain level at one point in time, but has not explained what the industry's actions will be in the subsequent period. Given that a satisfactory bargain has been reached in one period, does the industry have any incentive to allow a wage increase in the following period, assuming the public-limit price is still the effective restraint?

There are two reasons why a bargain that is satisfactory in one period may not remain satisfactory in the next period. In the first place, a period of time has passed since the previous agreement was signed. This has the effect of increasing the amount by which the public-limit price is raised by a given wage increase. It can be shown that, under the assumptions of this model, the passage of time *per se* increases the marginal profit from a wage increase, thus giving further incentive for allowing such a rise.

In the second place, the change in GNP may have increased during the period. Under certain quite reasonable assumptions, such an increase in GNP also increases the marginal profit from a wage rise. (A general statement is not possible because the result depends upon the reaction of the public authorities to a further wage rise.) Even if the change in GNP lowered the marginal profit from a wage rise, however, the passage of time during which the change in GNP took place might more than overbalance this, induc-

ing a wage rise. Thus, for example, industry and union might agree to a wage-price increase despite a fall in GNP.

(2) *The Effect of a Multiple-Period Horizon.* Suppose, as is likely, that the industry wishes to maximize the present value of profits from several periods to come, rather than confine itself to profits from the period at hand. What effect might this have upon the current wage bargain that is consummated? The answer depends on the relative magnitudes of several changes. It is possible that, by foregoing a wage-price increase for the coming period, the ability to raise price by more than the cost increase in the subsequent period is so enhanced that it gives rise to profit opportunities which more than offset the foregone extra profit from the current period. This is more likely to be the case the greater is the public pressure against a wage-price increase in the current period, the smaller is the response of GNP to the wage-price increases of this industry, and the shorter is the public's memory of wage-price increases that have already taken place in periods prior to the current one. It is clear that the multiple-period horizon provides an explanation of the phenomenon of the industry passing one round of wage-price increases, so that such behavior would not contradict the assumptions of the model.

III. CONCLUSIONS AND POLICY IMPLICATIONS

A. Empirical Relevance

By the very nature of its assumptions, this model is obviously not intended to be applicable to the experience of any more than a few very important industries. In addition, the simplifications assumed in order to clarify the effects of a public-limit price led us to abstract from other forces which would be operative in any given case. The task of this paper has been to present and clarify one idea; the task of empirical verification is distinct, and would require a considerably more complex model less exclusive of other forces. In spite of these reservations, however, the authors would be less than candid if we did not state our belief that the mechanism of our model takes us a considerable distance towards an understanding of the collective bargaining experience of the steel industry in the United States since World War II.

The task of *ad hoc* application to particular

wage disputes is further complicated by lack of reliable information with respect to such matters as productivity gains. The public is generally required to accept the industry's word that the price change corresponds to the cost change, although a residual public skepticism prevents the industry from making the price increases too excessive. The important point is that, if the industry is to raise prices at all, there must be some wage increase, and the industry therefore has an incentive not to resist the union's demands as strongly as they otherwise would have.

B. Implications for Industry Policy

In this section we consider the policy of the industry in terms of what we would expect them to do if they behave in accordance with the model. We have assumed that the firms in our industry are profit maximizers, but all of the conclusions follow even if the firms are only "profit improvers."

We have already noted that the industry subject to public pressure may use counter-pressure on the public by taking a strike, that the industry will put up a great show of resistance to the wage-price rise, that the industry will stoutly maintain that all the price increase is necessary to offset cost increases, and that it might be in the interest of the industry to pass a round of increases in order to get greater gains in the future. An essential feature of all of this is to convince the public that the union is "responsible" for the price increase. While any cost increase might serve to justify a price increase if well publicized, we might expect that the industry would conceal other cost increases and save them up, not using them to justify intermediate price increases. Thus all price increases would be timed to follow immediately upon wage increases, the industry making sure that the price increase is sufficient to more than cover cost increases of all sorts. In this way the maximum attention is drawn to the union as the active partner in pushing up prices.

By thus postponing the effect of increases in other costs the industry increases the time between price increases, and this makes the public-limit price more responsive to a given wage increase. On the other hand, there is a cost to this in terms of intermediate profits foregone. However, this can be avoided by getting ahead of

the process. Especially for a basic industry which sets "key" wage bargains, increases in their wages and prices tend to spread throughout the economy and return to the industry as higher non-labor costs. Indeed, if the labor contract contains a cost-of-living escalator, the industry may anticipate further labor cost increases as a result of its own wage-price increases. In this case, the industry may raise prices enough to cover these anticipated future cost increases. To the extent that they can convince the public that this is necessary, they will reap intermediate additional profits while still focussing attention away from themselves.

Where the public pressure against a price rise is greatest, so that only a mild price rise could accompany a wage increase, we may expect greater industry counter-pressure through advertising, taking a strike, making a show of tough resistance, etc. One of the interesting ways in which the industry may increase its counter-pressure is by a deliberate prolongation of a strike by its own demands upon the union. While publicity is given to the union's wage demands and the industry's resistance to inflationary forces, the level of wages may not even be a topic of discussion at the bargaining table. The industry can insist that it will not discuss wages until its own demands have been settled first. If these demands are settled in their favor they have double benefits; if not, they have at least had the desired effect of postponing the discussion of the wage issue.

The model suggests that, where a foreign-entry price is approached by the domestic public-limit price, the industry may have to seek tariff relief in connection with a "wage-induced price rise." Whether or not the industry merits sympathy for its avowed position of "being squeezed" between foreign competition and a powerful union may well depend upon the acceptance or rejection of the argument of this paper.

C. Implications for Public Policy

Clearly it is not sufficient to rely upon the "conflicting" self-interests of the parties to prevent wage-price increases in a key industry that has been operating under public pressure to keep prices below the profit-maximizing price. Nor will a general policy of monetary-fiscal restraint to keep the price level constant prevent price advances in this industry. Any

non-coercive public policy must be supplemented by even more vigorous public pressure against wage-induced price increases and, where applicable, by the threat of tariff reduction.

In order to implement these policies, it would be necessary to revise certain current public attitudes. In the first place, it is necessary to discount the notion that, because the union takes the credit for wage increases, it deserves the blame. The public should recognise the responsibility of management to resist. If the industry is to assume this responsibility, however, the public (especially the government) must avoid damning the industry both ways—the public must be willing to let parties strike to achieve their ends, and not bring pressure upon the industry (however important) to accede to the union's demands. Unless this is possible, either direct controls or continued wage-price increases seem inevitable.

Whatever specific policies are adopted will presumably be aimed at forcing industry and union to come to an agreement concerning the appropriate division of income between labor and property, and to do so *within* the current price structure. Such agreement is necessary to any policy of maintaining both full employment and stable prices with a *minimum* of governmental interference. The effects of monetary policy are necessarily broad and diffuse. If there are actually "key" wage-bargains in the economy, the efficient locus of public pressure is directly on the parties to these bargains.

IV. SUMMARY

In a very important basic industry that is not characterized by vigorous price competition, the industry's price may have been kept well below the profit-maximizing and entry-limiting prices by public pressure not to raise prices. Where the public provides an escape clause to allow price increases to accompany wage-induced cost increases, the industry may have a substantial incentive not to offer any real resistance to the union's wage demands. The existence of a strong anti-inflation monetary-fiscal program modifies this influence but does not stop it entirely. The industry can enhance its ability to raise prices by more than costs by counter-pressure, including a show of resistance. While the union probably cannot avoid being blamed for wage-price increases, it is not necessarily in its interest to avoid the blame even if it can. In

order to prevent continued wage-price increases in the key industry, the public must accompany its monetary-fiscal restraints with even stronger public pressure directly on the parties involved.

MATHEMATICAL APPENDIX

The basic model of this paper can be made more rigorous by a mathematical treatment, which many readers may find easier to follow. Where an equation is directly related to an assumption, definition, or result in the text, the appropriate section number will be indicated here for ready reference. In what follows, we assume that all functions possess continuous first and second derivatives for increases in the arguments.

The industry demand function is

$$(1) \quad Q_t = Q(P_t, Y_t) \quad (I, B)$$

where

$$(2) \quad \frac{\partial Q}{\partial P_t} < 0 \quad (I, B)$$

and

$$(3) \quad \frac{\partial Q}{\partial Y_t} > 0 \quad (I, B),$$

where Q_t is the amount demanded, P_t is the effective price, and Y_t is the level of GNP, all in the t^{th} period. In determining what wage-price policy to follow at the start of the t^{th} period, the industry deals with anticipated demand and anticipated GNP.

The price, P_t , which appears above is the public-limit price. This is the effective price in the t^{th} period, and is to be set at the start of the period according to the equation:

$$(4) \quad P_t = P_{t-1} + B_t P(\Delta W_t) \quad (I, C)$$

where W_t is the basic wage rate for the t^{th} period determined in the wage bargain at the start of the period, ΔW_t is the change in W_t from the preceding period, and B_t is a variable coefficient which is a parameter in the single period horizon case but can take on different values (at different points in time) as defined by

$$(5) \quad B_t = B(\Delta t, \Delta Y_{t-1}) \geq 0. \quad (I, C).$$

The combination of equations (4) and (5) may seem awkward, but is the most direct expression of the fundamental behavior hypothesized for the model. The signs of the partial first derivatives specified in the model are:

$$(6) \quad \frac{\partial P}{\partial \Delta W_t} > 0, \quad (\text{I, C})$$

$$(7) \quad \frac{\partial B}{\partial \Delta t} > 0, \quad (\text{I, C})$$

and

$$(8) \quad \frac{\partial B}{\partial \Delta Y_{t-1}} > 0. \quad (\text{I, C})$$

Also, note that $P(\Delta W_t)$ is a function such that

$$(9) \quad P(0) = 0. \quad (\text{I, C})$$

Second and cross partial derivatives in (4) and (5) are assumed equal to zero except as specified in:

$$(10) \quad \frac{\partial^2 P}{\partial (\Delta W_t)^2} < 0. \quad (\text{I, C})$$

Industry average = marginal cost is defined as:

$$(11) \quad C_t = C(W_t) \quad (\text{I, D})$$

where

$$(12) \quad \frac{\partial C}{\partial W_t} > 0.$$

The union behaves so that:

$$(13) \quad \Delta W_t = W_t - W_{t-1} \geq 0. \quad (\text{I, E})$$

The industry is free to choose ΔW_t subject to (13), and is assumed to choose in such a way as to maximize its expected profits. Profits in the t^{th} time period are defined as:

$$(14) \quad V_t = (P_t - C_t)Q_t.$$

To find the first order conditions for V_t to be a maximum, we evaluate all partial derivatives at the point of equilibrium. Also, we note that in the single period horizon case the notation may be simplified since $d\Delta W_t = dW_t$ and

$$d\Delta t = d\Delta Y_{t-1} = 0.$$

Thus we may treat $\partial P / \partial \Delta W_t$ as $\partial P / \partial W_t$, etc. Then the first order condition is, utilizing the function of a function rule, in general:

$$\begin{aligned} \frac{dV_t}{dW_t} &= \left(\frac{\partial P_t}{\partial W_t} - \frac{\partial C_t}{\partial W_t} \right) Q_t + (P_t - C_t) \frac{dQ_t}{dW_t} \\ &= \left(B_t \frac{\partial P}{\partial W_t} - \frac{\partial C}{\partial W_t} \right) Q_t + (P_t - C_t) \\ &\quad \cdot \left(B_t \frac{\partial P}{\partial W_t} \frac{\partial Q}{\partial P_t} + \frac{\partial Q}{\partial Y_t} \frac{dY_t}{dW_t} \right) \\ &= 0 \end{aligned} \quad (\text{II, A, 1})$$

This rather formidable looking result may be simplified by rearranging terms and defining some more traditional concepts. Let R_t denote the marginal revenue from an increase in the wage rate through its effect on price, M_t denote the marginal net return to the company from an increase in GNP , and K_t denote the marginal cost attributable to an increase in the wage rate, where in each case changes in output are taken into consideration as necessary results from (1) above. These concepts are defined by:

$$(16) \quad R_t = \left[P_t \left(\frac{\partial Q}{\partial P_t} \right) + Q_t \right] B_t \left(\frac{\partial P}{\partial W_t} \right), \quad (\text{II, A, 1})$$

$$(17) \quad M_t = (P_t - C_t) \frac{\partial Q}{\partial Y_t}, \quad (\text{II, A, 1})$$

and

$$(18) \quad K_t = C_t B_t \left(\frac{\partial P}{\partial W_t} \right) \left(\frac{\partial Q}{\partial P_t} \right) + Q_t \left(\frac{\partial C}{\partial W_t} \right) \quad (\text{II, A, 1})$$

It seems reasonable to assume that R_t , M_t , and K_t are all non-negative. Substitution from (16) - (18) into (15) yields the simplified expression:

$$(19) \quad \frac{dY_t}{dW_t} = R_t - K_t + M_t \left(\frac{dY_t}{dW_t} \right) = 0. \quad (\text{II, A, 1})$$

In the above expressions, the derivative dY_t/dW_t is determined by the economy's reaction to dW_t , as influenced by governmental policies. The value of the derivative is presumed to be estimated ad hoc by the industry. Conceptually a function underlies this derivative which would include among its arguments Y_{t-1} and ΔW_t . All other arguments being considered constants, we may write:

$$(20) \quad Y_t = Y(\Delta W_t, Y_{t-1}),$$

from which

$$(21) \quad \frac{dY_t}{dW_t} = g(Y_{t-1}) \geq 0 \text{ by assumption,}$$

where $g(Y_{t-1})$ is a function. Unfortunately it does not seem possible to specify the sign of the cross-derivative $\partial g / \partial Y_{t-1}$ on a-priori grounds. Indeed, the magnitudes of all derivatives of Y_t depend upon the general political climate, the philosophy of the Federal Reserve Board, and so forth. It

goes beyond the scope of this paper to actually attempt to write down all of the arguments of this function.

The general second order condition for profits in the t^{th} period to be maximized by the choice of W_t is, of course,

$$(22) \quad \frac{d^2 V_t}{dW_t^2} < 0.$$

In general, the second derivative in (22) is a formidable expression whose sign can only be specified by making additional assumptions about the relative magnitudes of the second partials and cross partials involved. In the text, we simply assumed that the second order condition was met. We now briefly consider the consequences of being unable to find an equilibrium point, at which both (19) and (22) are satisfied. Starting from any initial position defined by $(P_{t-1}, W_{t-1}, Y_{t-1})$, it will pay to increase both wages and prices if for any discrete change ΔW_t , it is found that $\Delta V_t / \Delta W_t > 0$. In this case, wages and prices in the industry will rise until the point at which $dV_t / dW_t = 0$ and $d^2 V_t / dW_t^2 < 0$ is reached. If the industry demand curve is negatively sloped, it is inconceivable that such a point not be found, for this would imply that prices could be raised to the *unrestrained* profit maximizing point and *still* the industry would wish to increase prices. The only circumstances which would allow this is where the effect of ΔW_t on demand (acting through ΔY_t) is great enough to offset the price increase for *any* change in W . This in turn would yield an "explosion", which may be ruled out for any reasonable combination of public-limit price pressure with monetary-fiscal policy. It should be noted, however, that the point at which $dV_t / dW_t = 0$ and $d^2 V_t / dW_t^2 < 0$ may coincide with the unrestrained profit maximizing price-output combination (at which the industry would stay even if price were freely variable without an accompanying wage change).

The alternative case is found when, starting from the initial position, $\Delta V_t / \Delta W_t < 0$ for all possible ΔW_t . In this case, the industry will choose $\Delta W_t = 0$ (equation (13) prevents $\Delta W_t < 0$). The case of the equality is included to allow for some realization of the effect of current wage-price changes on the industry's position beyond the horizon, although this is not strictly a part of the single period horizon case. This conclusion holds regardless of the values of dV_t / dW_t and $d^2 V_t / dW_t^2$ at all possible values of W_t .

From the general case, we turn to the two special cases of the text. The case of complete restraint occurs when, by hypothesis,

$$(23) \quad \frac{dY_t}{dW_t} = 0, \quad (\text{II, A, 2})$$

so that the first order condition (19) becomes

$$(24) \quad R_t - K_t = 0. \quad (\text{II, A, 2})$$

Since, by assumption, $M_t > 0$, it is possible to compare ordinarily the size of the wage increases implied by complete restraint and by the case of some permissiveness (where $dY_t / dW_t > 0$ is assumed). In the case of some permissiveness, $M(dY_t / dW_t) > 0$, so that $R_t - K_t < 0$ at the equilibrium position. Comparing this with the condition of complete restraint in (24), and assuming that $d^2 V_t / dW_t^2 < 0$ at both points and for all intermediate points, it clearly takes a larger wage increase to move from the initial position to the equilibrium position in the case of some permissiveness than in the case of complete restraint (assuming that marginal profit is positive at the initial position at least for the case of some permissiveness).

What has been called permissiveness in the text implies that full employment in this industry will be maintained. In the assumed absence of technological change this implies that

$$(25) \quad dQ_t = \frac{\partial Q}{\partial P_t} \cdot dP_t + \frac{\partial Q}{\partial Y_t} \cdot dY_t = 0 \quad (\text{II, A, 3})$$

i.e.: that $Q_t = Q_{t-1}$. Since the partial derivative with respect to the first argument is negative while the partial with respect to the second argument is positive, a price increase must be offset by an increase in GNP to maintain Q_t unchanged. This in turn implies:

$$(26) \quad \begin{aligned} \frac{dY_t}{dW_t} &= -\frac{\partial Q}{\partial P_t} \frac{dP_t}{dW_t} \bigg/ \frac{\partial Q}{\partial Y_t} \\ &= -B_t \frac{\partial P}{\partial W_t} \frac{\partial Q}{\partial P_t} \bigg/ \frac{\partial Q}{\partial Y_t} \quad (\text{II, A, 3}) \end{aligned}$$

When this result is substituted into the general first order equilibrium condition of (15) the condition reduces to:

$$(27) \quad B_t \frac{\partial P}{\partial W_t} - \frac{\partial C}{\partial W_t} = 0 \quad (\text{II, A, 3})$$

Under any less generous monetary-fiscal policy, the first term in (27) must exceed the second. A

more generous policy of the authorities, however, provides incentive to allow wages to rise even though public pressure limits the price increase to less than the increase in average cost.

The effect of the passage of time *per se* results from the manner in which the variables are defined as differences. Suppose that the first and second order conditions are each satisfied at both $t = 0$ and $t = 1$, and that both ΔW_0 and $\Delta W_1 > 0$. Notice that at $t = 1 + \epsilon$, where ϵ is small, B_t is less than at B_1 even if we hold ΔY_{t-1} constant. Thus, immediately after a contract is signed Δt falls to ϵ and B_t is reduced. This is what prevents the company from achieving its objective by continuous small increments. As Δt increases from ϵ to 1 B_t approaches its former level (assuming ΔY_{t-1} is constant). At $t = 2$ $B_2 = B_1$. ΔW_2 , however, has become zero, so that $\partial P/\partial W_t$ has been restored to its level as of before the prior wage increase, from which it was reduced by the wage increase as is indicated by (10) above. Thus, the passage of time has relaxed public pressure so that $\partial P/\partial W_t$ has been increased, and the effect on the first order condition (15) is given by:

$$(28) \quad \frac{\partial \left(R_t - K_t + M_t \frac{dY_t}{dW_t} \right)}{\partial \left(\frac{\partial P}{\partial W_t} \right)} = \left[(P_t - C_t) \frac{\partial Q}{\partial P_t} + Q_t \right] B_t > 0 \quad (\text{II, B, 1})$$

The inequality in (28) follows because ordinary marginal revenue with respect to a quantity change is less than the ordinary marginal cost with respect to a quantity change by the hypothesis that the public-limit price is effective and less than the unrestrained profit maximizing price. If both the first and second order conditions were satisfied at $t = 1$, then the equality of (15) may be restored by a wage-price increase at $t = 2$. These results depend upon the further assumption that the passage of time *per se* does not affect dY_t/dW_t , which seems reasonable.

The effect of a change in *GNP per se* is not as predictable. What is particularly important is the change in the first difference ΔY_{t-1} . This affects the expectations of future *GNP* (Y_t) as indicated in (20) above, and also affects the value of B_t as indicated in (5) and (8). Supposing $\Delta Y_1 = \Delta Y_0$, we have noted the position at $t = 2$ in the preceding paragraph. How would this have been altered by a slightly different value of ΔY_1 ? The change in the first order condition is given by:

$$(29) \quad \begin{aligned} & \frac{\partial \left(R_t - K_t + M_t \frac{dY_t}{dW_t} \right)}{\partial (\Delta Y_{t-1})} \\ &= \frac{\partial B}{\partial \Delta Y_{t-1}} \frac{\partial P}{\partial W_t} \left[(P_t - C_t) \frac{\partial Q}{\partial P_t} + Q_t \right] \\ &+ \left(B_t \frac{\partial P}{\partial W_t} - \frac{\partial C}{\partial W_t} \right) \frac{\partial Q}{\partial Y_t} \frac{\partial Y_t}{\partial \Delta Y_{t-1}} \\ &+ (P_t - C_t) \left[\left(B_t \frac{\partial P}{\partial W_t} \frac{\partial^2 Q}{\partial P_t \partial Y_t} + \frac{\partial^2 Q}{\partial Y_t^2} \frac{dY_t}{dW_t} \right) \right. \\ &\quad \left. + \frac{\partial Y_t}{\partial \Delta Y_{t-1}} + \frac{\partial Q}{\partial Y_t} \frac{\partial g}{\partial \Delta Y_{t-1}} \right] \quad (\text{II, B, 1}) \end{aligned}$$

The first of the three terms is necessarily positive (cf. the discussion of (28) and the specifications in (6) and (8) above). The second term will not be negative unless the monetary authorities are expected to be exceedingly generous (cf. the discussion of (27) above) and as long as an increase in income is not expected to lead to a fall in the next period's income (i.e.: as long as $\partial Y_t/\partial \Delta Y_{t-1}$ is non-negative). The third term, however, with its higher order derivatives, cannot be judged non-negative on the basis of assumptions previously stated. The three first order derivatives are non-negative, on our assumptions. The first of the second order partials ($\partial^2 Q/\partial P_t \partial Y_t$) may be assumed to be zero (an increase in *GNP* can be assumed to give a parallel shift of the price-quantity demand curve). The next second order partial ($\partial^2 Q/\partial Y_t^2$) is likely to be positive, reflecting the accelerator. But no general statement with respect to ($\partial g/\partial \Delta Y_{t-1}$) seems possible: it reflects the reactions of the monetary-fiscal authorities, and their reaction probably will differ depending upon the extent to which the change in *GNP* reflects price changes as opposed to changes in real output. Even if there is a strong enough adverse reaction from the monetary-fiscal authorities to make the third term negative, however, it is clear that the entire expression in (29) may still quite likely be positive, in which case an increase in *GNP* reinforces the effect of a passage of time.

The first order condition for the multiple-period horizon case is much too complex to be worth analysis here. For one thing, it is no longer possible to treat $\partial P/\partial \Delta W_t$ as $\partial P/\partial W_t$, etc. In addition, the industry must make estimates of the effect of a current wage-price increase on *GNP* in each of the succeeding periods. Finally, the considerations regarding the reaction of the

monetary-fiscal authorities, mentioned at the end of the preceding paragraph, become crucial. The propositions in the text (II, B, 2) may be derived intuitively, however, by considering the successive single period horizon case above. Recall that Δt is defined as the time that has elapsed since the preceding price-wage increase. Suppose that the public has a short memory, so that

$$\partial^2 B_t / \partial \Delta t^2 > 0$$

(i.e.: $\partial B / \partial \Delta t$ increases as Δt increases). Assume, provisionally, that *GNP* has been, is now and is expected to remain stable regardless of the wage-price bargain of this industry. Then by letting $\Delta W_t = 0$, the value of Δt in the succeeding period will be considerably enhanced, and the assumed non-linearity of B_t as a function of Δt means that the ability to raise price by more than the wage induced cost increase is more than proportionally increased. The greater is the public pressure against a current wage-price increase, the less current profits can be increased by letting current wages rise, and the greater will be the ratio of

discounted profits increase in the second period when current wages are unchanged to the sum of the discounted profits increases achieved by single period maximization. When this ratio exceeds one, it is profitable to pass one round of wage price increases. However, to relax a previous provisional assumption, the greater the response of *GNP* to the wage-price increase of this industry, the more profits can be increased in *both* the current and the succeeding periods by letting current wages rise even if the succeeding period has *no* wage increase. Thus, the smaller is the response of *GNP* to a wage-price increase of this industry, the more likely it is that the industry will pass a round of increases.

One further word may be appended. The arguments of the functions in (5) and (20) are those which are subject to some analysis. The parameters of these functions may be altered by changes in other (implicit) arguments, such as: whether or not it is an election year, what party is in power, etc. Analysis of these other arguments lies beyond the scope which we felt could be adequately treated by economic analysis.

UNIONISM AND WAGE MOVEMENTS

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I

Among the important aspects of the so-called *Eckstein Report*¹ is undoubtedly its analysis of the 1952-58 phase of postwar wage behavior. In discussing this period the *Report* recognizes specifically the role played by market power of corporations and unions. But, as Professor Hoover observed, "the *Report* places much greater emphasis on the power of corporations to set prices above competitive levels than on the power of labor unions to raise wages."² The role of unions is stressed in connection with the wage behavior in railroads and mining; and it is emphasized, together with the firms' market power and demand pressures, in the discussion of the pattern setting 1955-56 bargains in automobiles and steel. However, in the description of both the 1952-55 wage movements in manufacturing and of the spread of wage increases following the steel and auto settlements the *Report* places primary emphasis on the profitability and the market structure conditions of the industries which experienced relatively high wage advances. Unionism, on the other hand, is not viewed specifically as constituting a direct influence on the wage movements of particular industries.³

The basis for this interpretation appears to lie in the results of the analysis made by Harold Levinson, the staff economist responsible for the chapter on inflation. In Levinson's interpretation—a correct one, I believe—the wage pattern in manufacturing till 1951-52 could be best explained by pressures of demand. In the following years, however, divergences in wage movements of individual industries began to develop. Having considered several variables which could account for the divergent wage behavior in the 19 two digit industries in manufacturing,

Levinson found that "the most important factors which were related to wage changes were: (1) the level of profits, measured as a rate of return on equity, and (2) the degree of competition in the product market, as measured by 1954 concentration ratios."⁴ No significant relationship whatever was found between wage changes and any other factor. In particular, no relationship was found between wage changes and union strength—union strength being measured in terms of the industries' coverage by collective bargaining.⁵ The lack of association between wage increases and changes in output or employment argues thus in favor of an interpretation which emphasizes market power; but the lack of general association between wage changes and union strength presumably argues also against an emphasis on the role of collective bargaining.⁶

The present paper is concerned with the interpretation of the 1952-58 wage behavior in manufacturing. My first purpose is to point out that Levinson's finding about the lack of association between union strength and wage changes should be revised. This revision is indicated as a result of the availability of new data on the extent of collective bargaining in manufacturing. My second purpose is to outline briefly the interpretation of the post-1951 wage movements which I believe to be most consistent with the results of statistical analysis and other empirical material presented in the *Eckstein Re-*

¹ *Staff Report*, p. 147.

² *Staff Report*, pp. 149, 160.

³ That the presumable lack of association between wage changes and union strength influenced importantly the *Report's* interpretation is also indicated in the special study paper prepared by Levinson as a supplement to the discussion in Chapter 5 of the *Report*. In this study Levinson points out that among the industries with greatest wage increases were some weakly unionized ones. And he concludes: "Union strength per se, therefore, does not appear to have been an important factor explaining developments in the wage structure." (See H. M. Levinson, *Postwar Movement of Prices and Wages in Manufacturing Industries*, Study Paper No. 21, Printed for the use of the Joint Economic Committee, Washington, 1960, p. 6).

¹ *Staff Report on Employment, Growth and Price Levels*, prepared for consideration by the Joint Economic Committee, Congress of the United States, December 24, 1959.

² Calvin B. Hoover, "Employment, Growth and Price Levels: A Review Article," *Quarterly Journal of Economics*, August 1960, p. 380.

³ *Staff Report*, pp. 157-58.

port. This interpretation is concerned primarily with the factors underlying the changes in the wage structure of manufacturing rather than with the relation of the 1952-58 wage movements to the inflationary pressures of the period.

II

The estimates of the extent of collective bargaining used by Levinson to test the association between wage changes and union strength are subject to rather crucial limitations. The estimates were derived from 1946 data which themselves represented only rough estimates by the B.L.S. The original B.L.S. estimates referred to industries which could be grouped only very imperfectly into the industrial classifications used by Levinson; indeed, for some of the 19 manufacturing classifications the B.L.S. estimates provided very incomplete data.⁷ The chief limitation of the original B.L.S. estimates was that they expressed union coverage of industries in terms of a range of twenty percentage points (e.g., 40-59%). In using these 1946 data for estimates of collective bargaining coverage in 19 manufacturing classifications, Levinson could thus produce only a rough sort of figures—figures with a range of 25 percentage points. (See Table I.) As a consequence, the lack of relationship between union strength and wage changes, suggested by Levinson, could be reasonably discerned only by means of a visual inspection of the data.

In comparison with Levinson's estimates, the recently published data on the 1958 extent of collective bargaining in 19 industrial groups provide a highly superior indication of union strength in manufacturing during the 1950's.⁸

⁷ For example, the only industry in the classification of "Instruments and related products" for which B.L.S. estimates were available is "Clocks and Watches." This industry employed in 1954 only about 11% of the workers in the larger classification. (The B.L.S. did not indicate the method of constructing the 1946 estimates. They appear, however, to be an extension of earlier estimates made during World War II. (See "Extent of Collective Bargaining and Union Recognition, 1946," *Monthly Labor Review*, May 1947.)

⁸ See H. M. Douty, "Collective Bargaining Coverage in Factory Employment, 1958," *Monthly Labor Review*, April 1960. The new data were obtained from a sample of 6500 establishments selected in accordance with industry, location and establishment size. The data for each sampling unit

TABLE I
ESTIMATED EXTENT OF COLLECTIVE BARGAINING
IN 19 MANUFACTURING INDUSTRIES
(expressed as percentage of industry's workforce)

Industry	Levinson's Estimates (derived from 1946 data)	B.L.S. Esti- mates (1958)
Food and kindred products	25-50	68.1
Tobacco manufactures	25-50	62.6
Textile mill products	0-25	30.1
Apparel	75-100	59.7
Lumber and wood products	25-50	43.8
Furniture and fixtures	25-50	49.6
Paper and allied products	50-75	75.5
Printing and publishing	75-100	65.3
Chemicals and allied products	25-50	65.4
Products of petroleum and coal	50-75	89.5
Rubber products	75-100	80.6
Leather and leather products	25-50	49.3
Stone, clay and glass products	50-75	77.9
Primary metal industries	75-100	88.6
Fabricated metal products	50-75	70.6
Machinery (except electrical)	75-100	67.9
Electrical machinery	75-100	72.8
Transportation equipment	75-100	86.8
Instruments and related products	50-75	51.5

Sources: Staff Report, op. cit., p. 148; H. M. Douty, op. cit., p. 347.

Indeed, in view of the careful statistical procedures used in obtaining them, the 1958 estimates must be considered as the best data on union coverage in manufacturing ever available in this country. The comparison of the 1958 estimates with those of Levinson is shown in Table I. Since the 1958 data can be viewed as point estimates, it was possible to correlate changes in wages in the 19 industries with the index of union strength as measured by the extent of collective bargaining in each industry. The results of this correlation are shown in Table II. This table also shows coefficients of correlation between wage changes and concentration and profits—the two variables which, in Levinson's interpretation, indicated that corpor-

were weighted to reflect its probability of selection, with further adjustment to average employment in 1958. Although some minor changes in union coverage may have taken place during the 1952-58 years, the new data can be considered as representing correctly the extent of collective bargaining in that period.

TABLE II
SIMPLE CROSS SECTION CORRELATION COEFFICIENTS BETWEEN CHANGES IN STRAIGHT TIME HOURLY EARNING AND SELECTED VARIABLES IN 19 MANUFACTURING INDUSTRIES, 1952-58*

Year	Straight time earnings on		
	(A) Profits before taxes	(B) Concentration ratio	(C) Union strength
1952-53	0.550	0.423	0.625
1953-54	.628	.463	.502
1954-55	.514	.383	.591
1955-56	.055	.428	.325
1956-57	.546	.007	.511
1957-58	.392	.549	.706

* The 5 percent level of significance is 0.4585; the 1 percent level is 0.8781.

Sources: Columns (A) and (B) from *Staff Report*, p. 149. Column (C) computed from earnings data in H. M. Levinson, *Post-war Movement of Prices and Wages in Manufacturing Industries*, Study Paper No. 31, Printed for the use of the Joint Economic Committee, Washington, D.C.: 1960, Appendix A; and from H. M. Dooty, *op. cit.*, p. 347.

ate market power played a role in influencing the 1952-58 wage patterns.

The results of the correlation contradict the conclusion, which Levinson drew from the data available to him, that there was no evident relationship between union strength and wage changes. In five out of the six years the data show a statistically significant association between changes in hourly earnings and union strength in the 19 industries. This association is both more persistent and, in most years, stronger than that between wage changes and the two variables emphasized by Levinson—profits and concentration. Thus, for 1952-58 the association between wage changes and union strength is more generally applicable than that between wage changes and any other variable considered in the *Report*.

III

The results of the previously described correlation must be viewed in conjunction with the data relevant to the 1952-58 wage behavior which are presented in the *Eckstein Report*—the association between wage increases in the 19 industrial classifications and concentration and profits; the statistics which indicate lack of strong pressures on the labor supply of manu-

facturing industries; the discussion of the relative prosperity and optimistic expectations which characterized the concentrated industries during most of this period. Viewed in the context of these data the association between wage changes and union strength provides essentially the "missing link" in the chain of evidence which supports an interpretation of wage behavior rather different from the one offered by Levinson. Specifically, I believe that the totality of this evidence supports the interpretation which explains the broad outline of the post-1951 wage movements in terms of the following variables: a) the interrelationship of corporate and union market power in oligopolistic industries, and particularly the fact that in the absence of major downturns in demand, the unions in such industries can negotiate relatively high wage increases; b) the influence of such increases on wages of industries related to oligopolies through union organization and common labor supply; c) the overall influence of the key bargains on the wage settlements in well organized industries in which economic environment puts unions in a strong bargaining position. The role of these factors is discussed briefly in the following paragraphs.

Corporate and union market power

The ability of unions in the oligopolistic industries to negotiate relatively high wage gains must be viewed as a crucial element in the interpretation of the post-1951 divergences in manufacturing wage patterns. The reasons for union bargaining power in such industries have been indicated frequently in literature. As Schlesinger put it: "A labor organization situated in a highly concentrated industry, which need not fear the entry of new firms, is in a position to play upon either the inelastic or the expanding demand conditions prevailing in the product market to extract higher wages." This formulation is highly relevant to the 1952-58 period. While there was no particularly strong pressure on the labor supply, the firms in the concentrated industries did operate during most of the period under conditions of relatively high utilization of capacity and optimistic expectations. Given the general ability of firms to administer price

* James R. Schlesinger, "Market Structure, Union Power and Inflation," *Southern Economic Journal*, January 1958, p. 304.

adjustments, the well entrenched unions were apparently able under these circumstances to extract substantially higher gains than those obtained in the industries in which there were strong competitive pressures in the product market, and which were not compelled to match the high increases by any "tightness" in their labor supply.

The foregoing view is, of course, consistent with the results of correlation between wage changes and concentration ratios and also, as I shall point out below, with the association between wage increases and profits. But it is also highly consistent with the results of correlation between wage changes and union strength—a point which requires some elaboration.

The extent of collective bargaining which is used in the correlation as a measure of "union strength" need not indicate the actual degree of union market power in particular industries. What also counts critically is the economic characteristics of the industry—particularly the degree of competition and the geographic extent of the product market. Yet despite this basic limitation our measure of "union strength" correlated well with wage increases. What is the explanation?

The main, though not the only,¹⁰ reason lies in the extent of unionization of oligopolistic industries. Although there are some obvious exceptions, the concentrated industries are as a rule highly unionized. This, it should be noted, is not a coincidence. In terms of effort spent per potential union member large plants are easier to organize than small establishments; the concern about adverse publicity prevents most managements of large firms from actively fighting organizing drives; once unions are established in the existing plants they are rarely exposed to the entry of new establishments or to the danger of "run-away" shops. In the present socio-political environment extensive unionization is thus likely to constitute an important characteristic of a concentrated industry.

When compared with most competitive industries, the unions in the oligopolistic sector represent both numerical strength (in relation to the industries' workforce) and actual market power. Accordingly, a comparison of the extent of collective bargaining does provide a rough guide to union strength in the major industrial

classifications. This fact accounts in a large measure for the results of correlation between wage changes and extent of collective bargaining. By the same token it also lends support to the view that, in their most basic aspect, the post-1951 changes in manufacturing wage structure represent a divergence of wage behavior between the industries in which managements and unions share a substantial degree of market power and the highly competitive industries.

Wages and profits

The association between wage increases and profits constitutes another piece of evidence consistent with the foregoing interpretation. In 1952-58 profits—measured as a rate of return on stockholders' equity—were strongly correlated with concentration ratios.¹¹ The relatively high profitability of oligopolistic industries in a period of several upward adjustments in their product prices should be interpreted, I believe, in terms of what Galbraith called "the existence of the margin of unliquidated gain"¹² in concentrated markets. From the viewpoint of labor unions either the actual profitability or the existence of such a "margin" must be considered as providing a *permissive* condition for negotiating relatively high wage advances.

It may be recalled that in the analytical framework suggested by Garbarino¹³ it was the changes in man-hour productivity that constituted the "permissive variable" in concentrated industries. Garbarino's interpretation assumes implicitly that, prior to the increase in productivity, the prices in oligopolistic markets were set in accordance with short run profit maximization, either for the dominant firm or the oligopolists as a group. If, however, oligopolistic firms have "what amounts to a reserve of unliquidated gains from unmade price advances"—that is if they can successfully respond to labor and material cost changes by upward price adjustments—the relation between wage changes and physical productivity becomes attenuated and it is the relatively high profitability of the firm that both permits and stimulates union negotiated

¹⁰ Levinson, *op. cit.*, p. 3, Table 1.

¹¹ J. K. Galbraith, *The Affluent Society* (Boston, Mass.: Houghton Mifflin, 1958), p. 217.

¹² Joseph Garbarino, "A Theory of Interindustry Wage Structure Variation," *Quarterly Journal of Economics*, May 1950.

¹³ See the following discussion, in Section III.

wage gains.²⁴ One should not be surprised, therefore, that, in contrast to the association between wage changes and profits, there was in 1952-58 no significant relationship between wage changes and man-hour productivity increases.

Wage bargains in oligopolies and "wage contours"

The process of wage determination is ordinarily characterized by many interrelationships among the wage bargains of individual industries. Such interrelationships cannot be revealed explicitly by the statistical tests described above. They appear, however, to have played an important role in shaping the 1952-58 wage behavior of manufacturing, and their influence is reflected both in the actual record of wage movements in the 19 industrial classifications, and, indirectly, in the results of correlation between wage changes and union strength.

Groups of establishments which are bound together by common wage making forces—the "wage contours" as Dunlop termed them²⁵—do not necessarily coincide with any one of the 19 industrial classifications used in statistical tests. Some "wage contours"—groups of business units linked by similarities or interrelations of product markets, common labor supply, and common or interdependent in their policies labor organizations—do span, in fact, component industries in two or more industrial classifications. In many cases such ties link component industries which have concentrated product markets, for instance, basic steel (in "Primary metals") and shipbuilding (in "Transportation"). But in many cases the "wage contours" contain both concentrated industries and large segments of industries with low concentration. As a consequence, the influence of wage increases negotiated in oligopolistic firms is reflected in wage movements of some major industrial classifications which, in terms of national markets at least, have low concentration indexes. In particular, the two low concentration classifications

whose wage behavior appears to reflect such influence are "Fabricated metal products" and "Machinery (except electrical)." Both these industrial classifications are well organized; and both experienced relatively high wage increases in 1952-58.

To clarify the preceding statements we will consider briefly the classification of "Fabricated metal products."²⁶ Several component industries of this classification—metal stamping, boiler shop products, plating and polishing—serve largely as suppliers to automobiles, aircraft, electrical equipment, printing machinery and other concentrated industries. Accordingly, large numbers of metal products firms find it advantageous to locate in the same areas as the plants they supply.²⁷ Some of the component industries (e.g., boiler shop products) may be actually considered as primarily local market industries; in others (e.g., metal stamping) the degree of inter-area competition is relatively weak. The metal products firms frequently employ labor which in terms of skill and other characteristics is similar to that of the local plants of concentrated industries. In many cases, moreover, the local unions of the metal products establishments belong to the same parent organization as those of the local plants of the oligopolistic firms.

The characteristics indicated above create a condition in which the policies of the unions in large segments of the "Metal products" classification are likely to be heavily influenced by the wage bargains of particular concentrated industries. To be sure, in many cases the original "patterns" have to be modified in accordance with the economic position of the individual firm or group of firms. However, if the metal products industries are relatively prosperous the overall trend of their wage bargain is likely to come close to that in the concentrated sector of manufacturing.

There is no reason to believe that during most

²⁴ It is of some interest to note that Dunlop, whose seminal article stimulated much discussion about the relation between wages and productivity, appears to consider in his later work *profits* rather than *physical productivity* as a crucial wage determining variable. See J. T. Dunlop, "The Task of Contemporary Wage Theory" in *The Theory of Wage Determination*, J. T. Dunlop, ed. (London: Macmillan, 1957), p. 23 (equation 8).

²⁵ Dunlop, *op. cit.*, p. 17.

²⁶ Several important component industries of the "Machinery" classification display characteristics essentially similar to those of "Metal products." "Machinery" has, however, also some very highly concentrated component industries and its concentration index is thus higher than that of "Metal products." This aspect strengthens, of course, the link of the classification with other oligopolistic industries.

²⁷ Very large numbers of metal fabricators locate also close to their source of supply—that is, in centers of basic steel production.

of 1952-58 the metal products or machinery establishments experienced any real shortage of labor supply. But large segments of these establishments, particularly in "Machinery," did share in the relative prosperity which, during most of the period, characterized the durable goods sector. In these circumstances the well entrenched unions were apparently able to come close in their bargains to the patterns set by the relevant oligopolistic firms—that is firms which dominated the "wage contour" of the particular segment of metal products or machinery establishments.²⁸

The foregoing discussion provides, I believe, the essential explanation of the wage behavior in these two classifications of manufacturing. But it also throws further light on the reason for the relatively high association between wage changes and unionization. As already emphasized, both "Metal products" and "Machinery" have, in terms of national markets, low concentration indexes; and of the two only "Machinery" had better than average returns on stockholders' equity during 1952-58. However, both classifications are strongly organized—a condition which, together with the other characteristics of the component industries, influenced significantly their wage behavior.

Other industries with high wage gains

The wage movements in the oligopolistic "wage contours," as contrasted with those in most of the competitive industries, account for the bulk of the divergence in the post-1951 wage pattern of manufacturing. However, to round out the sketch of the key features of this pattern it is fruitful to consider briefly two additional strongly unionized classifications which experienced in 1952-58 comparatively high wage advances—"Food products" and "Paper products."²⁹

The category of "Food products" contains the

relatively concentrated and strongly unionized meat packing industry. Of more importance, however, at least in employment terms are several component industries whose plants, by the nature of their product, serve primarily local or regional markets—baking, beer, dairy products, soft drinks and others. The firms of these industries which are located in strongly unionized areas are thus protected from the competition of "run-away" shops or plants located in low wage sections of the country. What is more, the demand for their products is relatively inelastic and labor costs are not a large part of total costs. In a period of relative prosperity such as 1952-58 these factors create an environment which, from the viewpoint of union ability to achieve wage gains, compares favorably with that in highly competitive industries selling in national markets.

It has been recognized that the wage bargains in meat packing are distinctly related to those in the durable goods sector of manufacturing.³⁰ But though there are many exceptions (e.g., bakeries in Pittsburgh or South Bend), the wages in the local food industries are influenced by the major bargains in concentrated industries in a more indirect way.

As the settlements in the concentrated sector create what has been termed as "the bargaining context of their time"³¹ and as their influence spreads to the more competitive fringes of the oligopolistic "wage contours," they affect wage settlements in a variety of industries whose economic characteristics permit the unions to follow or imitate partially the general patterns of the major industries. For one thing, there are contacts in the labor markets (e.g., maintenance mechanics in bakeries). More importantly the well publicized "key bargains" give union leaders (and employers) an idea of the broad pattern in wage settlements, create a basis for "coercive comparisons" and a standard of what can be considered as an "equitable treatment."³² These fac-

²⁸ For an excellent analysis of the way in which collective bargaining acts as a "transmission belt" of a settlement made in a major concentrated industry see H. M. Levinson, "Pattern Bargaining: A Case Study of the Automobile Workers," *Quarterly Journal of Economics*, May 1960.

²⁹ The relevant data on these and other classifications are found in H. M. Levinson, *Postwar Movement of Prices and Wages in Manufacturing Industries*, Study Paper No. 21, Printed for the use of the Joint Economic Committee, Washington, D. C., 1960, Appendix A.

³⁰ Arthur M. Ross, "The External Wage Structure," in *New Concepts in Wage Determination*, George W. Taylor and Frank C. Pierson, eds. (New York: McGraw-Hill, 1957), p. 194.

³¹ *Ibid.*, p. 203.

³² For the discussion of the importance of imitation and "equitable treatment" see M. W. Reder, "The Theory of Union Wage Policy," *Review of Economics and Statistics*, February 1952, pp. 37-39. Also Carl M. Stevens, "On the Theory of Negotiation," *Quarterly Journal of Economics*, February 1958, p. 89.

tors are likely to influence union and management policies in the well organized local industries which face relatively inelastic demand and whose labor costs are low in relation to total costs. As already indicated, many local food industries fall into such a category. Their high wage advances in 1952-58 appear thus to reflect the joint influence of the wage settlements in the "wage contours" of concentrated industries and of the relatively substantial market power of the local union organization.

The economic environment of the "Paper products" industries also appears to have been highly favorable to wage settlements which came close to, or equalled, those in the concentrated sector. In the paper industries the product demand is inelastic and labor costs are a relatively small proportion of total costs; the investment in plants is very substantial and, in the short run at least, there is little geographical mobility of establishments. Moreover, judging from the high profit records the paper industries experienced very favorable demand conditions in 1952-58. These conditions put the unions, which have organized over 75 per cent of the work force and which are particularly well established in the large and most efficient plants, in a relatively strong bargaining position,²³ and made possible wage settlements which tended to follow the patterns of the oligopolistic "wage contours."

Only a detailed analysis of the component industries can provide a full picture of all the factors which influenced the wage behavior in "Food products" and "Paper products." However, as suggested above, in its most essential features the wage behavior of these industries can be adequately explained as a joint product of the influence of oligopolistic wage bargains and of the economic environment in which the unions could exert a relatively strong pressure for high wage gains.²⁴

²³ For an analysis of the main components of "Paper products" which also indicates relatively strong bargaining position of unions see Robert M. McDonald, "Pulp and Paper," Chapter 5 in Lloyd G. Reynolds and Cynthia H. Taft, *The Evolution of Wage Structure* (New Haven, Conn.: Yale University Press, 1956), pp. 98-103.

²⁴ It should be noted that, while both "Paper products" and "Food products" are strongly unionized, neither classification has a high concentration index, and only "Paper products" showed high profitability in 1952-58. The wage behavior of these industrial groups provides then another reason for

IV

The preceding outline of the main features of the wage behavior in 1952-58 has much in common with the discussion in the *Eckstein Report*. In particular, both interpretations indicate the importance of the relative prosperity and optimistic expectations which characterized a large sector of manufacturing during most of the period, and the role of concentrated market structures as a factor facilitating relatively high wage gains. However, there are also some important differences. For one thing, instead of singling out the 1955-56 bargains in automobiles and steel, the preceding interpretation views the 1952-58 wage behavior in all the oligopolistic industries as essentially a joint product of corporate and union market power. The auto and steel settlements constitute, in this view, no more than important components in the network of interrelated bargains made during 1952-58 in the concentrated sector of manufacturing. Secondly, the present paper views unionism as an important link, particularly in such a period as 1952-58 in which there seemed to be no unusual pressure on the labor supply, between wage movements of firms in concentrated industries and those in the other establishments of oligopolistic "wage contours." And thirdly, the foregoing discussion suggests that collective bargaining constituted also an important influence on wage behavior in some non-concentrated but highly organized industries in which the economic environment placed unions in a comparatively strong bargaining position. All told, as compared with Levinson's discussion, the present paper therefore considers collective bargaining as one of the crucial factors influencing the 1952-58 wage patterns in manufacturing.

It is apparent that the discussion in the preceding section is highly consistent with the results of statistical tests pertaining to the post-1951 wage behavior. But it should be noted that it provides also a more adequate interpretation of the manufacturing wage pattern than that presented in the *Eckstein Report*. Nothing in the *Report* itself or in the special studies prepared for the Joint Economic Committee suggests that the 1952-58 wage patterns could be explained in terms of demand pressure operating in the labor

the fact that association between wage changes and union strength was stronger than that between wage changes and concentration or profits.

markets.²² Accordingly, unless one places considerable emphasis on the bargaining power of unions, it is difficult to account for the divergences in the wage behavior which developed among manufacturing industries in 1952-55 and 1956-58.

To be sure, it has been argued recently that the pattern setting nature of wage increases in oligopolistic industries does not depend essentially on the existence of unions.²³ According to this view, the large firms in concentrated industries faced, as they are, with both short run fluctuations in labor demand and short run inelasticity of labor supply, have a strong motive to maintain permanent reputation as high wage firms. Under conditions in which oligopolistic firms are reluctant to upset the existing price structure by price reductions, and at the same time fear that too lush profits may attract new entry, the "kitty" for wage advances is provided by gains from physical productivity and improved market conditions. The high wage increases granted in the oligopolistic industries spread then to other sectors, as firms try to

maintain their relative position in the wage structure of particular labor markets.

It is not necessary to discuss the above model in detail in order to point out that it hardly fits the 1952-58 period. Quite apart from the fact that the oligopolistic firms were continuously improving rather than maintaining their already high wage position, the most obvious reason is that the 1952-58 wage increases resulted in almost all cases in substantially higher labor costs.²⁴ The wage gains won by workers in the concentrated industries cannot be viewed as reflecting merely a distribution of part of productivity gains or profits to the employees. Their consequence was a worsening in the unit labor cost position of the firms—a condition which could be reversed only by a better than average improvement in man-hour productivity and which could have only adverse effect on corporate profitability during such short run downturns in demand as, for instance, in 1958.

Unit labor costs can, of course, rise when wages are bid up as a result of high demand pressures in the labor market. But if this explanation is not accepted, as it is not for 1952-58 in the *Report*, the reasonable alternative must emphasize the bargaining power of unions in the "wage contours" of oligopolistic industries. Both the statistical evidence and the adequacy of the explanation appear to argue thus in favor of the interpretation outlined in the preceding section of the paper.

²² See for example Otto Eckstein and Gary Fromm, *Steel and the Postwar Inflation*; and Thomas A. Wilson, *An Analysis of the Inflation in Machinery Prices*, Study Papers No. 2 and 3, Prepared for the use of the Joint Economic Committee, Washington, D. C., 1959.

²³ Alfred Kuhn, "Market Structures and Wage Push Inflation," *Industrial and Labor Relations Review*, January 1959, pp. 243-51; also Charles L. Schultze, *Recent Inflation in the United States*, Study Paper No. 1, Printed for the use of the Joint Economic Committee, Washington, D. C., 1959, pp. 66-69.

²⁴ H. M. Levinson, *Postwar Movement of Prices and Wages in Manufacturing Industries*, op. cit., Tables A-1-A-21, pp. 28-48.

POPULATION SIZE AND DEMAND

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The demand for individual products or product categories is generally thought to depend, among other things, on the number of consuming units. Demand functions therefore typically contain a population variable or else are tied to per capita income rather than to total income.¹ This approach to demand analysis and estimation appears to be perfectly logical. Yet it is not always so. Under certain conditions, a demand function ignoring population changes is likely to be a better forecasting tool than a function recognizing them. This somewhat unorthodox thesis is developed in the following article.

The character of aggregate demand relations cannot be directly inferred from macro-economic behavior. The social cosmos is too complex for that, and the scope for experimentation too limited. The economist is thus forced to look at the individual to gain some insight into typical demand reactions. Even at this level, the most that can be achieved is identification of the various influences impinging on demand—income, price, etc. The form of the relations between causes and effect remains a matter for speculation.

Right from the start, the economic forecaster is thus at a disadvantage vis-à-vis his counterpart in the natural sciences. This handicap increases as presumptions concerning individual reaction patterns are summarized into a theory of mass behavior. Let us look at this matter in greater detail, for it is here that the logical justification for the use of per capita data (or a population variable) in demand analysis must be sought.

I. LINEAR DEMAND FUNCTIONS

If one assumes that (over the relevant range) demand is linearly related to real income and certain other factors, the individual demand relationship will appear as follows:

$$1. \quad d' = a + by' + \dots,$$

where d' equals individual demand for the product

under analysis in units, and where y' represents the individual buyer's real income.

If one further assumes that there are N consumers in the society concerned and that all of them have identical incomes and respond similarly to changes in income, the aggregate (or market) demand relation is reflected by the following equations:

$$2a. \quad D' = Na + bY' + \dots, \text{ or}$$

$$2b. \quad D'/N = a + bY'/N + \dots,$$

where D' ($= \sum d'$) equals market demand in units, D'/N per capita demand in units, Y' ($= \sum y'$) aggregate real income, and Y'/N per capital real income. Market demand is thus shown to depend not only on real income, relative price, and other factors already contained in the individual demand equations, but also on population size or, more precisely, the number of potential consuming units. A numerical illustration of this will be germane.

Assume that:²

$$a = 10$$

$$b = .01$$

$$Y_1' = \$1,000,000 \text{ (Aggregate real income in Period I)}$$

$$Y_2' = \$1,000,000 \text{ (Aggregate real income in Period II)}$$

$$N_1 = 400 \text{ (Population size in Period I)}$$

$$N_2 = 500 \text{ (Population size in Period II)}$$

Then for the first period:

$$\begin{aligned} D_1' &= aN_1 + bY_1' = 10 \cdot 400 \\ &\quad + .01 \cdot 1,000,000 = 14,000 \text{ units.} \end{aligned}$$

And for the second period:

$$\begin{aligned} D_2' &= aN_2 + bY_2' = 10 \cdot 500 \\ &\quad + .01 \cdot 1,000,000 = 15,000 \text{ units.} \end{aligned}$$

Hence, even though aggregate income has remained the same, more sales are to be expected in the second period than in the first. The reason for this is the assumed change in population size. A

¹ See, for instance, Joel Dean, *Managerial Economics* (New York: Prentice-Hall, 1961), pp. 211 and 215.

² For the sake of simplicity, sales determinants other than income and population size are left out of account here.

forecasting equation resting on income alone would have failed to register the above-noted increase in demand from 14,000 units to 15,000. Only if a were equal to zero (that is, if the income elasticity of the product concerned were 1 at all income levels), population size could be ignored with impunity. Demand in both periods would then amount to 10,000 units irrespective of any changes that may have occurred in the number of potential consuming units. The prevailing total income level alone would be the strategic demand determinant.

In summary, the following observations may be made concerning the joint effects of income and population change on sales under the assumed conditions:

(1) In the case of products which account for a larger share of the consumer's budget at low than at high income levels (necessities), a is positive, and population increase reinforces the market effects of income increase and vice versa.

(2) In the case of articles which account for the same share of the consumer's budget at all income levels, a is equal to zero, and population size is immaterial to aggregate demand.

(3) In the case of items which account for a larger share of the consumer's budget at high than at low income levels (luxuries), a is negative, and an increase in population will tend to neutralize a rise in national income insofar as market demand is concerned, and vice versa.

The above argument, as noted, rests on several simplifying assumptions: All consumption units react similarly to income change. All incomes are equal. All individual demand relations can be adequately described by *linear* functions.

What happens when these restrictions are abandoned? If the first one is dropped, individual demand functions will appear differentiated as follows:

$$3a. \quad d_1' = a + b_1 y' + \dots,$$

$$3b. \quad d_2' = a + b_2 y' + \dots, \text{ etc.}$$

Aggregation of these expressions into market totals leads to:

$$4a. \quad D' = Na + \bar{b} Y' + \dots, \text{ or}$$

$$4b. \quad D'/N = a + \bar{b} Y'/N + \dots,$$

where all symbols except \bar{b} have the same significance as they do in Equations 2a and 2b. The income coefficient here is the arithmetic mean of

the b -values pertaining to the underlying individual demand functions. N , the population variable, is still seen to be a significant market factor. The assumption of interpersonal variation in income responses does not invalidate the conclusions reached previously.

The same is found to apply if the unrealistic postulate of income equality is abandoned. The individual demand functions then take on the following form:

$$5a. \quad d_1' = a + b_1 y_1' + \dots,$$

$$5b. \quad d_2' = a + b_2 y_2' + \dots, \text{ etc.}$$

The corresponding market equation may be written:

$$6a. \quad D' = Na + \bar{b} Y' + \dots, \text{ or}$$

$$6b. \quad D'/N = a + \bar{b} Y'/N + \dots,$$

where \bar{b} is a weighted mean of the individual income coefficients and all other symbols have the meaning already explained. As the weights involved are the individual incomes (y_1' , y_2' , etc.) underlying the market equation, income redistribution is likely to affect the validity of the coefficient \bar{b} . However, this problem lies outside the confines of the topic here under consideration. N , the population factor, still would seem to be a variable influencing market demand, and functions containing it must therefore be considered more refined descriptions of economic reality and better forecasting tools than functions lacking it.

The stated principle remains valid even if one concedes that individuals do not only differ in respect to their incomes and reactions to income change but also with reference to the importance they place upon the product concerned (as reflected by the a -values of the individual demand equations). The relevant market demand function then assumes the following form:

$$7a. \quad D' = Na + \bar{b} Y' + \dots, \text{ or}$$

$$7b. \quad D'/N = a + \bar{b} Y'/N + \dots$$

\bar{a} here represents the average y -intercept of the individual demand functions. The other symbols have the previously noted meaning.

It should be noted that what has been said above about the various "macroparameters," a , b , \bar{a} , \bar{b} , etc., is not necessarily true of their statistical estimates. The latter may, in certain circumstances, not merely depend on the corresponding "microparameters" but also on non-

corresponding ones. That is, they may be mixtures of very heterogeneous elements, which essentially destroys their descriptive and predictive usefulness. Thus, for instance, the a -value or \bar{a} -value of the market demand function may not only depend on the a -values of the underlying individual functions but also on the other coefficients.³ This problem does not really concern us here but is mentioned in order to avoid misinterpretation of the conclusions so far arrived at.

II. PARABOLIC DEMAND FUNCTIONS

If demand relations are considered to be parabolic (or hyperbolic) rather than linear, the individual functions appear as follows:

$$8. \quad d' = a \cdot y'^b \dots,$$

where d' represents individual demand in units, y' the individual buyer's real income, a the number of units bought when income amounts to \$1.00, and b an approximation of the income elasticity of demand.

Aggregation on the assumption that individual incomes and responses are equal leads to the expressions:⁴

$$9a. \quad D' = aN^{1-b}Y'^b \dots,^5 \text{ or}$$

$$9b. \quad D'/N = a(Y'/N)^b \dots,$$

where N , as before, equals the number of consumers, D' market demand in units, D'/N per capita demand in units, Y' aggregate real income, and Y'/N per capita real income. This is the form in which econometric demand analysis is frequently pursued, and, as is seen, use of a population variable is theoretically justified—provided that the majority of individual incomes are of similar magnitude. However, analytical

³ See H. Theil, *Linear Aggregation of Economic Relations* (Amsterdam: North-Holland Publishing Company, 1954), pp. 10-20.

⁴ It is important to note that aggregation of parabolic or hyperbolic demand functions is not analogous to the summation of linear functions. Nor can such parallelism be produced by translating the individual equations into logarithmic form. One would thus obtain a linear aggregate function, to be sure, but not one that is usable, for it would contain such terms as $\sum \log d'$ and $\sum \log y'$. The antilogarithms of these expressions are not equal to market demand and total buyer income but rather to the products of all individual demands and all individual incomes, concepts which have no economic meaning.

⁵ For $\sum a y'^b = a \sum y'^b = a N y'^b = a N (N y' / N)^b = a N (Y' / N)^b = a N^{1-b} Y'^b$.

concern with population size loses its value in the face of income inequality among potential buyers, for a $\sum y'^b$ (the sum of the individual demands, i.e., actual market demand) will then no longer be equal to $a N^{1-b} Y'^b$ (the market demand value estimated from per capita or population-adjusted data). Rather it will lie somewhere between this value and $a Y'^b$ (the market demand level estimated without reference to population changes), approximating the latter the more closely the greater the degree of income inequality among potential buyers.⁶

Since all existing societies are marked by great income inequality, the above argument leads to the conclusion that a parabolic (or hyperbolic) demand function which is *unadjusted* for population changes is likely to estimate sales potentials more accurately than one which is so adjusted. Again, a numerical example will be a useful addition to the discussion.

Case A—Income Equality. Assume that:

$$a = 1/10,000,000$$

$$b = 2$$

$$Y_1' = \$20,000 \text{ (Aggregate real income in Period I)}$$

$$Y_2' = \$20,000 \text{ (Aggregate real income in Period II)}$$

$$N_1 = 4 \text{ (Number of potential customers in Period I)}$$

$$N_2 = 5 \text{ (Number of potential customers in Period II)}$$

Assume further that all individual real incomes amount to \$5,000 in Period I and to \$4,000 in Period II. Then one has for the first period:

$$\begin{aligned} D_1' &= d_1' + d_2' + d_3' + d_4' \\ &= a(y_1'^b + y_2'^b + y_3'^b + y_4'^b) \\ &= 1/10,000,000 (5,000^2 + 5,000^2 + 5,000^2 + 5,000^2) = 10 \text{ units,} \end{aligned}$$

and for the second period:

$$\begin{aligned} D_2' &= a(y_1'^b + y_2'^b + y_3'^b + y_4'^b + y_5'^b) \\ &= 1/10,000,000 (4,000^2 + 4,000^2 + 4,000^2 + 4,000^2 + 4,000^2) \\ &= 8 \text{ units.} \end{aligned}$$

⁶ The principle here stated can be intuitively recognized from such numerical examples as are presented below. A more rigorous proof is provided by Hölder's and Jensen's Inequalities. A detailed explanation of this matter is set forth in a special note at the end of this article.

Exactly the same results can be obtained by using Market Demand Equation 9a, namely:

$$D_1' = aN^{1-1/3}Y^{1/3} = 1/10,000,000 \cdot 4^{-1/3} \cdot 20,000^2 \\ = 10 \text{ units,}$$

and:

$$D_2' = 1/10,000,000 \cdot 5^{-1/3} \cdot 20,000^2 = 8 \text{ units.}$$

Case B—Income Inequality. Make the same assumptions as above with the exception of income equality. For the latter substitute the somewhat extreme hypothesis that, in Period I, three of the potential customers earn \$1 each and the fourth \$19,997 and that, in Period II, four persons earn \$1 each and one person \$19,996. That is, aggregate income has not changed, but there has been population growth—among the very poor. Then one has for the true market demand in the first period:

$$D_1' = 1/10,000,000 \\ \cdot (1^3 + 1^3 + 1^3 + 19,997^3) = 40 \text{ units,}$$

and in the second period:

$$D_2' = 1/10,000,000 \\ \cdot (1^3 + 1^3 + 1^3 + 1^3 + 19,996^3) = 40 \text{ units.}$$

But these results do not at all agree with those obtained above from a market equation making adjustment for population change ($D' = aN^{1-1/3}Y^{1/3}$). On the other hand, they are perfectly approximated by a market equation resting on aggregate data alone ($D' = aY^{1/3}$). Thus, ignoring population movements, one has for the first period:

$$D_1' = 1/10,000,000 \cdot 20,000^2 \\ = 40 \text{ units, and for the second period:}$$

$$D_2' = 1/10,000,000 \cdot 20,000^2 = 40 \text{ units.}$$

Of course, the numerical illustration here presented is based on rather extreme assumptions. Income inequality in the real world is not as great as above postulated. Nor does population change only take place among the destitute. Nevertheless, under more realistic conditions, the principle at issue must still be expected to have validity. A somewhat modified illustration could easily show that. Changes in the number of potential customers is a variable meriting the more analytical attention the more equal the incomes of these individuals or families. Inversely, the greater the

income inequality among the consumers having access to a given market the less meaningful do per capita data become. But this is not yet the whole story.

When not only incomes are assumed unequal but also individual sales responses to income change (and this can hardly be avoided in a realistic model of market behavior), the mathematical relation between microparameters and macroparameters becomes so complex that logical justification of the use of per capita data (or a population variable) in market demand functions of parabolic or hyperbolic type would seem to be impossible. Population change should therefore not enter parabolic demand analysis unless certain refinements are possible.

In favorable circumstances, the analyst might be able to divide the total market into two or more sectors which are relatively homogeneous as far as individual elasticities are concerned. This might be possible in the light of what is generally known about the consumers in question—their occupations, their way of life, their answers to questionnaires, etc.

But even then, unless these various market sectors are each composed of persons or families belonging to the same income bracket (high, middle, or low, as the case may be), and, unless a total income figure can be determined for each sector separately, the use of a population variable or of per capita data would still seem inappropriate.

III. CONCLUDING REMARKS

The above argument suggests that per capita data or a population variable be used in linear market demand functions.⁷

⁷ It should be noted that, for the sake of brevity, the term *population* has frequently been used in the present context as a synonym for the number of potential buyers. Actually, the two magnitudes are seldom equal. Few products can be useful to all the residents of a given region. Again, in the case of durables, the NPB excludes not only those who have no use for the product but also those who are not yet ready to replace a unit already in their possession.

To determine the NPB of a durable product is a difficult problem, involving information concerning the age distribution of the units in use and an idea of the scrapping rate likely to prevail in the period to which the demand forecast at issue refers.

When general population data are not used, because a more exact determination of the number

A parabolic or hyperbolic function is not likely to gain from the inclusion of a population variable. On the contrary, it will tend to become less accurate as a description of economic reality.

If a really serviceable parabolic description of demand behavior is desired, it will be necessary to divide the total market up into several partial buying sectors whose members are relatively uniform as to incomes and responses to income change. These subsectors must be investigated separately, and a separate market demand function must be established for each. In such partial market functions, use of population-adjusted data is theoretically defensible.

Mathematical Note

The conclusions of the present article rest on the assumption that:

$$A. \quad N^{1-b} Y'^b \leq \sum y'^b \leq Y'^b \quad (b > 1), \text{ or}$$

$$B. \quad N^{1-b} Y'^b \geq \sum y'^b \geq Y'^b \quad (b < 1),$$

where the left-hand terms represent market demand estimated (by means of a parabolic equation) from per capita data, where the middle terms stand for actual market demand, and where the right-hand terms symbolize market demand estimated (by means of a parabolic equation) without reference to population change. The a -coefficient used in the numerical examples above has been assumed to be equal to 1 here for the sake of simplicity.

The first part of Statements A and B follows from Hölder's Inequality, the second from Jensen's Inequality.

Hölder's Inequality can be found in G. H. Hardy, J. E. Littlewood, and C. Polya, *Inequalities*. Cambridge, 1952, on page 24 as Theorem 13, which states that:

$$\sum ab < (\sum a^k)^{1/k} \cdot (\sum b^{k'})^{1/k'} \quad (k > 1)$$

of potential buyers is considered a necessary refinement of the analysis, there arises an additional problem. Aggregate income values should then not pertain to the total population in the region concerned but only to the market segment composed of those who are deemed to be potential customers. It may be very difficult to compile such an income series.

unless (a^k) and $(b^{k'})$ are proportional. (k is assumed to be unequal to either 0 or 1, and k' is assumed to be conjugate to k , that is, equal to $\frac{k}{k-1}$.)

Setting all $b = 1$ and designating the number of terms by N , we have:

$$\sum a \leq (\sum a^k)^{1/k} N^{1/k'}$$

$$\sum a \leq (\sum a^k)^{1/k} N^{k-1}$$

$$(\sum a)^k \leq (\sum a^k) N^{k-1}$$

$$N^{1-b} (\sum a)^b \leq (\sum a^b)$$

It should be noted that, as all b have been set equal to 1, a^b becomes proportional to $b^{k'}$ in the special case when all a are equal. Hence the symbol \leq rather than $<$ is appropriate.

If we now substitute b for k , y' for a , and Y' for $\sum a$, the above expression becomes:

$$N^{1-b} Y'^b \leq (\sum y'^b),$$

which is the first half of Inequality A set forth above. The first half of Inequality B, which applies to cases of inelastic demand ($b < 1$), can be derived similarly.

It remains to find theoretical authority for the second part of Inequalities A and B. For this, one must turn to Jensen's Inequality, which appears in the above-cited text as Theorem 19 on page 28:

If $0 < r < s$, then

$$(\sum a^s)^{1/s} < (\sum a^r)^{1/r}$$

unless all the a but one are zero.

If one substitutes y' for a , b for s , 1 for r , and Y' for $\sum a$, Jensen's Inequality takes on the appearance of the second half of Inequality A above, namely:

$$(\sum y'^b)^{1/b} \leq Y', \text{ or}$$

$$(\sum y'^b) \leq Y'^b$$

The two sides will be equal if all y' except one are equal to 0, that is, in the case of extreme income inequality, where only one person in the community or market has all the income. The second part of Inequality B can be derived from Jensen's theorem by setting $s = 1$ and $r = b$.

THE SUBSIDIZATION OF INDUSTRY BY LOCAL COMMUNITIES IN THE SOUTH¹

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American communities lacking sufficient local employment opportunity have long practiced the subsidization of industry. During the depression, for instance, the practice was widespread, and in the post-war period it has been gaining in importance. The phenomenon has been little noticed by economists, however, and to the extent that it has been noticed, it has been condemned. In this paper the subsidization of industry by local communities suffering from un- or underemployment will be defended, and a bolder approach than that generally in vogue will be advocated.

Un- and underemployment are the result of wage rigidities. If wages were completely flexible unemployment could not persist. Competition between workers for jobs would lead to a fall in the local wage level, and wage differentials between communities would operate more powerfully than is true at present to cause the location of new industry in what are now surplus labor areas. Since competition for industry between communities on the basis of wage differentials is limited by existing wage floors, competition on the basis of payroll subsidies tends to take its place. These subsidies drive a wedge between wages and entrepreneurial labor cost. Should the practice generally be carried to its logical limit, un- and underemployment would be eliminated and the national product increased just as surely as if wages could somehow be made completely flexible. Moreover, forced migration would be halted. Forced migration is present when people who, being unable to find work in their community at the prevailing wage rate, are compelled to seek their fortune elsewhere. Today, this is a matter of utmost concern to a great

many declining rural communities where "opportunities for off-farm employment are only a small fraction of the number needed to provide full employment for the available able-bodied manpower of working age."² We should realize, therefore, that much of the interregional migration we observe is a dimension of the underemployment problem and not a desirable phenomenon—judging by the preferences of the people concerned. What we should strive for is that people be given a free choice between accepting employment at home at a relatively low wage and migrating to another locality where they can earn more.

In terms of aggregate community income, subsidizing industry can be enormously profitable. The general idea is as follows. Suppose that the minimum wage in a community is \$1.00 per hour in manufacturing and that the marginal revenue product of labor in agriculture is \$0.15 (Sutherland and Bishop recently found that in the North Carolina Piedmont labor on low-production farms is used up to the point that it yields a return of \$1.20 per 9½ hour day of additional labor³ and Heady and Baker indicate that in 1950 the marginal product of labor on Alabama Piedmont farms was in the vicinity of \$40 per month.⁴) Suppose further that the community is able to attract a manufacturing enterprise by paying it \$0.10 for every man-hour of employment it provides. This would amount to approximately \$200 per man per year, which, capitalized at an interest rate of 5%, represents a subsidy of \$4,000 per worker or a donation of \$400,000

¹ U. S., Staff of the Subcommittee on Low-Income Families, Joint Committee on the Economic Report, *Characteristics of the Low-Income Population and Related Federal Programs*, 84th Cong., 1st Sess. (Washington, D. C.: U. S. Government Printing Office, 1955), p. 10.

² U. S. Congress, Subcommittee on Low-Income Families of the Joint Committee on the Economic Report, *Hearings, Low-Income Families*, 84th Cong., 1st Sess., 1955, p. 394.

³ Earl O. Heady and C. B. Baker, "Resource Adjustments to Equate Productivities in Agriculture," *Southern Economic Journal*, July 1954, p. 38.

⁴ This paper, a condensed version of a forthcoming book, *Local Subsidies for Industry* (Chapel Hill, N. C.: University of North Carolina Press, 1961), was presented at the Annual Meeting of the Southern Economic Association at Atlanta, Georgia, November 18, 1960. The author wishes to acknowledge his indebtedness to the Inter-University Committee for Economic Research on the South for financial aid received for his project.

to a plant employing 100 men—an unusually large subsidy and one that certainly would be condemned as extravagant. The community would nevertheless make a net gain of \$.75 per man-hour of work provided. If for a moment we look upon the community as an income-maximizing corporation making an investment the returns of which are measured in terms of aggregate income gains, the net rate of returns (excluding the cost of servicing the debt the community may incur in order to finance the deal) in our example would be nearly 40 per cent per year. This, however, does not take into consideration the favorable repercussions of increased spending within the community by the recipients of the wages and by the enterprise itself. If we assume the local income multiplier to be 1.25, net returns would be about 50 per cent, so that our community would recover its investment in approximately two years. After that, the presence of a plant would practically guarantee a payroll for an indefinite time to come, without further outlay.

In reality returns have almost invariably been much higher, even during the depression of the thirties, when communities resorted to so-called "drastic" action in order to cope with the evil of unemployment. As an example may be quoted the contract between the city of Natchez and the Armstrong Tire and Rubber Company, which started operations in the city in 1938. This was one of 12 promotions involving local governments that were approved by Mississippi's State Industrial Commission under that state's BAWI (Balance Agriculture with Industry) plan during the first period of its operation, 1936-1940, when actual subsidies were still permitted. (This can hardly be said of BAWI as it now operates, the plan having been revived after the War.) Under the agreement the city raised \$300,000 for the construction of a factory which was to be leased to the company at a nominal rent of \$600 per year for five years. At the end of that time title would be transferred to the company, provided it had disbursed \$1 million in wages. If not, transfer would be postponed until it had done so. The contract stipulated, moreover, that the company was to pay \$300,000 in wages annually. Thus the arrangement practically amounted to a gift of the building contingent on the payment of the stipulated wages. The anticipated return on the investment then, in terms of wages alone, was 100 per cent per year. (As things turned out

wages greatly exceeded the stipulated minimum.) Yet Ernest Hopkins, from whose study of the early BAWI the data here presented are derived, remarks: "The weakness of Natchez' bargaining position [the city desperately needed employment] was apparent in the rental terms of the contract." So it is no exaggeration to say that the Natchez case was considered a particularly drastic one. (There also was a great deal of hesitation on the part of the State Industrial Commission, whose approval was required, on the ground that the relation between the \$300,000 bond issue necessary to finance the building and the \$300,000 payroll was considered unfavorable.) And in fact returns have been far higher in most other cases, although Natchez of course acted wisely in not letting this opportunity pass.

Thus Hopkins estimates that over a four and one-half year period (1939-43) the ratio of payrolls to subsidies of all twelve early BAWI promotions has been in the order of 36 to 1, which indicates an average return on investment (excluding the multiplier effect) of 800 per cent per year.⁶ Similarly, figures presented by W. D. Knight derived from an extensive survey of the subsidization practice in Wisconsin during the depression indicate that in the large sample studied by this author (130 promotions in 40 cities) returns computed in the same manner must have been in the vicinity of 1,000 per cent per year on the average.⁷ As a final example may be cited the case of Herrin, Illinois, related by Victor Roterus.⁸ Herrin is a town located in the soft-coal region in the southern part of the state with a long history of unemployment. Since 1942, 5 new industries have come to the town; every one of these industries was attracted by means of subsidization. In 1956 these firms together employed about 3,000 employees; their aggregate payroll for that year exceeded \$7 million. Roterus

⁶ Ernest J. Hopkins, *Mississippi's BAWI Plan, an experiment in industrial subsidization*, Department of Research and Statistics, Federal Reserve Bank of Atlanta (Atlanta, Ga.: 1944), p. 46.

⁷ *Ibid.*, pp. 55-56.

⁸ The data upon which this conclusion is based are presented in W. D. Knight, *Subsidization of Industry in Forty Selected Cities in Wisconsin, 1930-1948* (Madison, Wis.: The University of Wisconsin, 1947), pp. 173-79.

⁹ Victor Roterus, "Community Industrial Development—a Nationwide Survey," U. S. Congress, Senate, Committee on Banking and Currency, *Development Corporations and Authorities*, 86th Cong., 1st Sess., December 1959, p. 218-29.

computes that the price per head of the population for this payroll amounted to a \$12 donation plus the extension of a \$72 low interest loan. Since the population was around 9,300, this implies a direct return on investment of more than 6,000 per cent per year if we consider only the donations, while the return is still more than 900 per cent if donations and loans are taken together and the entire sum is considered a donation. Clearly, since the net-subsidization value of a low interest loan is only a minor fraction of the amount loaned, the actual return has been much closer to 6,000 than to 900 per cent and has probably been considerably in excess of 6,000 per cent because of the multiplier. If we take the 6,000 per cent figure as a conservative estimate, it means that the community earned its investment back in less than a week. It is as if you could buy an income of \$100 a week by paying \$100 once.

These examples do not represent a special selection but are typical of the kind of thing most any community that has un- or underemployment could achieve nowadays if it were willing to do what it takes to "buy" industry. One can only conclude that under the circumstances that have hitherto prevailed and that prevail today, subsidies so small that they are dwarfed by the returns can make the difference between eked-out misery and prosperity. The order of magnitude of the returns is such that it does not matter that for lack of precise data the computations are a bit rough and that in some cases even the causation may be questionable. About this last matter one can only say that if subsidies are so low that their decisive importance may be reasonably questioned, communities that have long been plagued by insufficient local employment opportunity should scarcely take the chance of continuing to suffer this condition for failure to supply these small concessions. Mayor Tooley of Lafayette, Tenn., one of the few towns that in recent years has gone all-out for industry puts it as follows: "The little town that wants industry to stop the flow of young people away from its surrounding rural area does what is called 'buying industry' or it does not get any." The "high sounding talk" about not offering inducements is the worst advice that can be offered a small town and, the mayor adds: "I am awfully tired of hearing the fine theorists of industrial development say to the little town desperate for a payroll: 'Only a sick industry wants a subsidy.'" Similarly, Macon County Agricultural

Agent Luck, appearing on the same panel, said: "You listen to the experts tell you 'No.' Then if you are wise you do whatever it takes to get the plant, and I mean just that 'whatever it takes.'" These people emphasize that any town can imitate the example of Lafayette.* The present author agrees one hundred per cent with Mayor Tooley and Mr. Luck! But what are the objections that have been raised against the practice?

The objections can be classified in two broad categories. One, which may perhaps be called "theoretical," contains variations on the theme that, while conceivably an individual community may gain by subsidizing industry, there will be a mutual cancellation of gains should the practice be generally adopted, and that moreover any gain that may accrue to a single community is bought at the expense of losses elsewhere that presumably are greater. In other words, inducing industry to come to your community by means of subsidies is a "beggar-my-neighbor" policy, to be put in the same class as levying tolls on uncrowded rivers, as did the robber barons of old. It is playing a negative sum game that in the end will only cause losses to the society as a whole, since it interferes with the proper allocation of resources. The appropriate analogy would be the temporary advantage that a person may derive from standing up at a football game in order to see better. Such a person imposes upon those behind him and may cause them to do the same thing. With everybody standing nobody can see better, and the net result is only the discomfort of having to stand up.

This analogy is false, however, for competition for industry between communities by means of subsidies tends to correct existing "distortions" in the market rather than to introduce new ones. It takes the place of wage competition that would occur if wages were completely flexible and which in that case would direct additional investments to those locations where they contribute most to the national product. It can easily be demonstrated that a full employment community has nothing to gain from the practice, in-
come-wise or otherwise, and in fact we observe that it is labor-surplus communities that engage in the practice. The reason for this is that the source of the gain lies in the discrepancy between entrepreneurial labor cost and the social oppor-

*See "Buy Industry" or "You May Not Get it," says La Fayette Mayor Who Learned the Hard Way," *Tennessee Town and City* (July 1957).

tunity cost of labor which exists in communities where there is unemployment. Thus competitive subsidization is not a zero sum game but a positive sum game, similar to competition between enterprises and owners of production factors. As in the latter type of competition, there is of course some cancellation of benefits, but over and above that, something remains. This something is the absorption in productive occupations of formerly un- or underemployed workers, whose labor adds to the national product.

It is often alleged that subsidies are likely to cause the transfer of enterprises from one place to another, leaving distress in their wake. However, this effect is likely to be minor. Most established enterprises are firmly rooted where they are, because for a variety of reasons relocation is very expensive. It does, of course, occasionally occur, but it is a relatively rare occurrence. As Robock points out: "Recent industrial growth in the Southeast resulted almost completely from new additions to industry capacity rather than from northern plants pulling up stakes and moving South . . . Yet, flailing away at the invisible straw man of relocation to the South continues to be a favorable pastime. . . ." In marginal cases the offer of a subsidy in a prospective new location may make a decisive difference, but in the general case a subsidization offer held out by a surplus labor community is likely to be more effective in causing a new enterprise or a new branch plant to be established there rather than elsewhere. In many cases this will mean that a new plant which otherwise would have located in a full employment community is induced to locate in a surplus labor community, where jobs are needed. Thus on the whole, instead of causing dislocation, subsidization is instrumental in directing additional plant capacity to locations where the marginal efficiency of the investment is greatest.

A few words should be said about the likely effect of the general adoption of a subsidization policy pushed to rational limits upon the chances of any given community to attract industry by this means. That practically any community suffering from unemployment or widespread underemployment can at present greatly increase local employment opportunity through subsidization at little expense relative to the income gain,

given the present level of subsidization activity elsewhere, is something about which there can be no doubt. However, if all should play the game more vigorously, conditions would of course change in the sense that "buying payroll" would become more expensive. But this does not mean that in equilibrium all gain would be eliminated at the margin. How much the marginal gain would be depends upon the difference between presently prevailing wages and the hypothetical wage rates that would establish full employment in every community if wages were completely flexible. In the case of flexibility, wages would be bid down in every community to a certain level lower than that now prevailing; in the case of unimpeded subsidization, subsidies would be bid up at the margin to a level equal to the difference between the present wage level and the hypothetical wage level that would cause full employment to be established. It may be safely assumed that in the great majority of American communities that difference would not be large. And if this be true, returns on investments in subsidies would remain large even if every labor surplus community really should become an aggressive bidder for industry. It may be added that the income distribution effect of competitive subsidization would be entirely different from that of introducing wage flexibility (supposing that this could somehow be done). Even if labor were made to pay the entire subsidy, its income would remain larger than in the case of wage flexibility. This is true because only at the margin would subsidies be bid up to the difference between actual wages and the hypothetical full employment wage. In other words, going that far would be necessary only to accomplish the absorption of the "last" worker in productive enterprise. For a rational subsidization policy would mean that the community acts as a discriminatory seller of labor, i.e., as a monopolist who has full discriminatory power. This power derives from the presence of scarce immobile resources within the community. Some enterprises could be attracted with smaller inducements per dollar of payroll disbursed than others—just as perhaps some may need no inducement at all—and the community would never offer more than the minimum necessary to attract a given industry.

The second category of objections contains those that may be considered "practical" in nature. First, it is said that a sound industry needs

²⁰ Stefan H. Robock, "Industrialization and Economic Progress in the Southeast," *Southern Economic Journal*, April 1954, pp. 319-20.

no subsidies and is not interested in them. Naturally only the second point is relevant, although the argument is often presented as if "no need" implies "no interest," from which it follows that only weak industries that cannot make ends meet and are otherwise undesirable can be tempted by an offer of subsidization. There is simply not a shred of truth in this argument. One would not expect enterprises in general to act this way, and in fact they do not. Examples of well-known, financially strong firms that have accepted subsidies abound. As an illustration it may be mentioned that Knight, whose report on 130 Wisconsin promotions constitutes one of the most careful and extensive investigations of the subsidization practice, says in his foreword that at first he shared the widespread belief in the unstable and unsatisfactory nature of firms likely to be attracted by subsidization, but that this preconceived notion was not confirmed by the facts.¹¹ It should be added that there seems to be a dawning realization of the fact that even perfectly respectable enterprises are in business for profit and may require some form of subsidy as a condition for their establishment in a particular community. Thus during a meeting last year of the Industrial Committee of 100 of the Chattanooga Chamber of Commerce, which this writer attended, it was brought out that such a requirement is very common. A mimeographed paper distributed to the participants says in this context: "CAUTION—Do not be misled into believing that 'fly by night' industries are the only ones that require financing."

Secondly, it is asserted that the best way for a community to attract industry is to make itself attractive by means of civic improvements. The proponents of this approach are opposed to subsidization, claiming that this would interfere with civic improvement. As Lowry puts it: "The alternatives which face local government wanting to invest public funds in the community's economic future are . . . rather clearly defined. One approach is to extend financial inducements directly to industry, in effect to build the new factory and let the new school building wait. The other approach is to help create a community more attractive to people who staff the industry."¹²

¹¹ Knight, *op. cit.*, p. iii.

¹² Robert E. Lowry, "City Subsidies to Industry Wane," *National Municipal Review*, March 1945, p. 112.

It is true that a certain amount of fire protection, law enforcement, etc., are essential to attract industry, and that a community seriously lacking in these respects might do best to provide these basic services in adequate measure before it engages in subsidization. However, the American community that is really grossly deficient in this respect is a rarity. Beyond that, the relation between municipal outlays for the general public and production cost in industrial enterprise becomes remote and intangible, and is at best very speculative. Moreover, surveys indicate that the typical entrepreneur shares this opinion. Thus an extensive state by state investigation, laid down in a Joint Statement issued in 1952 by a large number of southern university departments and research institutions that bears the title *Local Government Services and Industrial Development in the Southeast* concludes: "Judging from these state surveys, a relation between general community services and industrial location might seem to be regarded by most of the industrialists interviewed in the Southeast as either nonexistent or at best intangible and elusive."¹³ Yet, undaunted by these findings, the report concludes that community services "are perhaps the only lasting inducement which local government has it in its power to extend to industry."¹⁴ All other policies, including that of providing special services to industry at general expense, i.e., subsidization, are listed as "short-sighted." "All of these alternatives assume that the welfare of the industry can be held apart and separate from the welfare of the community at large,"¹⁵ the latter presumably to be identified with services provided by the government. As to subsidization, the facts are that those communities which have gone all-out for industry

¹³ *Local Government Services and Industrial Development in the Southeast*, a Joint Statement by: University of Alabama, Bureau of Public Administration; University of Florida, Public Administration Clearing Service; University of Georgia, Bureau of Public Administration; University of Kentucky, Bureau of Government Research; University of Mississippi, Bureau of Public Administration; University of North Carolina, Institute for Research in Social Science; University of Tennessee, Bureau of Public Administration in Cooperation with the Tennessee State Planning Commission; Tennessee Valley Authority, Division of Regional Studies (University, Alabama: University of Alabama, 1952), pp. 7, 8.

¹⁴ *Ibid.*, p. 26.

¹⁵ *Ibid.*

have been able to procure what they were after by this means, and have prospered as a result. On the other hand, unfortunate instances of communities losing a prospect due to their refusal or inability to make even the slightest concession are also on record.

The opponents of subsidization have thoroughly succeeded in throwing the practice in disrepute, and this has been reflected in repressive legislation by the states. The practice has not been suppressed, but the aura of subversion surrounding it has rendered denial imperative in all but a few exceptional cases, and has made rational discussion almost impossible. Private development corporations, organized by the business interests in a community, often engage in hidden forms of subsidization such as procuring low-interest loans or loans considered too risky by banks and other financial institutions, or in the procurement of factory buildings at low rental. Occasionally, more drastic forms of subsidization are observed, but unfortunately most corporations seem to believe in the so-called revolving fund approach. Under this approach, the purpose is to maintain intact funds once raised for the purpose of subsidization, so that they can be used over and over again, and if possible to earn some return on these funds in the form of interest payments on loans extended to prospects. In this way the subsidies can be rationalized as "business-like" propositions, which serves to placate the indiscriminating observer as well as the man who knows that "subsidies" are wrong but nevertheless intuitively senses the appropriateness of the action in question. This situation would be much less disturbing if the attitude it reflects had not often interfered with the extension of more "extreme" subsidies in situations where this was indicated, for by limiting themselves to concessions consistent with the revolving fund approach, a great many development corporations have not been able to attract any industry at all. In most of the thinking on this subject there is a curious inconsistency. On the one hand it is recognized that the role of a development corporation is to serve the community by bringing in additional payrolls, with contingent benefits in the form of increased business activity. On the other hand, the notion persists that the money invested in this type of activity should at least be kept intact and if possible yield direct returns. One is kept wondering why the indirect benefits (payrolls, etc.) that form

the acknowledged justification of a corporation's activity in the first place may not themselves be considered as the returns on a permanent rather than a revolving investment in a community's prosperity. If development corporations could only discard their prejudice against open subsidies, they could contribute vastly more to the creation of local employment opportunity than they presently do. And successful corporations need not fear to make repeated appeals for contributions to the community: experience shows that this is quite possible and that in fact, with earlier results to point to, those who stand to gain from attracting more industry usually respond more enthusiastically to such appeals.

Private action has the advantage that it cannot be made subject to the repressive legislation referred to above. However, municipal action may be more effective in marshalling the resources of the community in an equitable manner for what may be properly considered a public purpose, namely the creation of employment opportunity. Repression of municipal initiative has taken various forms. In many states local tax concessions to new industry are prohibited, in others they are limited to 5 or 10 years. Making available municipal funds to industry is generally presumed illegal in states that do not have special enabling legislation, and the states that do have enabling legislation have subjected their municipalities to the severest restrictions. In every case the revolving fund approach has been incorporated in the law: when municipal bonds are issued to finance the construction of factory buildings for lease to private enterprise rental terms must be such as to cover amortization plus interest. Moreover, in imitation of Mississippi's BAWI plan a few states require approval of each factory bond issue by a central state authority. This set-up has been greatly praised; it is supposed to "protect" the municipalities from engaging in "unsound" deals. Let us therefore briefly look into the result of this policy under the old BAWI, which had a greater potential than the present one because the law at that time did not require that factory bond issues be amortized out of rental payments. It may be said without exaggeration that the bureaucratic interference of the State Industrial Commission, which was charged with the screening of applications, has almost completely frustrated the efforts of local communities to bring in industry. The Commission bought safety as a traffic policeman might by

virtually halting all traffic. The result of this smothering overprotectiveness was that all in all 12 BAWI plants were established between 1936 and 1940, although the board received some 4,000 applications. A few favored cities benefited greatly from the enterprises that were attracted (although if left on their own they might have acquired more industry), but the great majority were left to suffer the pangs of depression, barred from helping themselves by the dictatorial power vested in the Committee. Should we be surprised if under such circumstances local communities have come to look to the Federal Government for help? With the returns on investment in subsidization as high as they are even the poorest community is perfectly capable of helping itself, but to a large extent the states have made this impossible.

In the most recent nationwide surveys, the presence of local development groups is reported in practically all labor surplus areas, and within their self-imposed limitations these groups have developed great activity. Thus a 1957 report by Levitan to the U. S. House of Representatives' Committee on Banking and Currency states that some 1,200 development corporations—less than 40 per cent of the total number—had built at least one plant for an industrial prospect, while 80 per cent had indicated their willingness to do so.²⁸ Moreover, many local governments do what they can, sometimes illegally, in the way of tax concessions, providing municipal services at low cost, rezoning land for industrial purposes, and issuance of bonds for the construction of plants.

²⁸ Sar A. Levitan, *Federal Assistance to Labor Surplus Areas*. A report prepared at the request of the Chairman of the Committee on Banking and Currency, U. S. House of Representatives, 85th Cong., 1st Sess. (Washington, D. C.: U. S. Government Printing Office, 1957), p. 62.

Often there is close cooperation between private development groups and the municipal government. In a great many cases this action has been successful, but in many other cases the impediments discussed in this paper which generally prevent communities from extending what is considered a more drastic type of subsidy have caused utter failure. Feeble subsidies of the kind now current are fine if they are sufficient; if not, a bolder approach is indicated. Even in recent years a relatively small number of communities have been willing to do what it takes to acquire industry, using such devices as making available factory space at virtually no cost to the occupant, making donations in cash, etc. These communities stand out as examples of what can be achieved by the localities themselves in their fight against un- or underemployment and its attending evils. Should these communities be generally imitated, returns to subsidization in terms of aggregate community income would fall but would remain high. Considerably more new industry would be directed to labor surplus areas, the national income would increase more rapidly, un- and underemployment would diminish, and migration would largely become a matter of people being attracted by high wages elsewhere rather than being pushed out for lack of employment opportunity at home. That the people in the various labor surplus communities would stand behind such a subsidization policy is suggested by the overwhelming majorities at the polls in favor of municipal factory bond issues. To achieve these results it is in the first place necessary that state legislators as well as the local leaders themselves change their attitudes toward the subsidization practice. The presently prevailing attitudes are mostly the result of the fact that the economics of the problem is simply not understood.

THE IMPACT OF COLLECTIVE BARGAINING ON MANAGEMENT¹

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For many years students of industrial relations have studied Sumner Slichter's *Union Policies and Industrial Management*, published in 1941 by the Brookings Institution. However, the increases in union membership following the Supreme Court's approval of the Wagner Act and the decisions of the War Labor Board have both helped to change industrial relations so that the earlier study, a classic in its time, has become out of date. Professor Slichter was asked to do a revision, but "replied that developments had been so extensive since 1940 that revision was impossible."² An entirely new research project was authorized with Professors Healy and Livernash joining Slichter in an ambitious program. Several younger men also worked with them, helping to conduct the several hundred necessary interviews. Professor Slichter did not live to see the book in print but two days before his death completed his work on the manuscript.

The book, therefore, may well be considered a fitting tribute to Slichter's lifelong interest in industrial relations. Furthermore, although one may argue with details in the book, differ from some of its conclusions, or even wish it were shorter, one knows this will be another classic in the field.

The Impact of Collective Bargaining on Management is frankly an empirical study, but based upon surveys and impressions rather than upon statistics. Economists who occasionally like to measure the immeasurable will look in vain for correlation analyses of grievances and size of firm, or wild-cat strikes and the affiliation of the union. Yet, these two subjects are discussed. Nor do the authors attempt a theory of industrial unrest such as Professor Siegel developed so

interestingly in a recent paper prepared for a National Bureau of Economic Research conference. Nevertheless, the authors present an excellent summary of industrial relations in the United States, together with observations from their research on what trade unions have done to management through collective bargaining.

Readers of this book who are not abreast with National Labor Relations Board decisions as approved by the United States Supreme Court will be amazed at the number of matters now included under the term "other conditions of employment." In his book on collective bargaining, Professor Neil Chamberlain describes the marketing theory of collective bargaining "as the process which determines under what terms labor will continue to be supplied to a company by its existing employees, and by those newly hired as well. The primary emphasis which is generally given to the wage scale serves to reinforce this view, since it suggests the money exchange which is the most prevalent basis for contract."³ Yet the Slichter, Healy, and Livernash book barely mentions what at one time appears to have been the subject of collective bargaining, viz., the wage scale. Surely concepts of bargaining power must be restudied, since many of these theories are apparently based upon the ability of the contracting parties to influence wages. In areas where pattern wage decisions are the rule, bargainners may merely agree to the inevitable, after discussing wage rates, and spend their tiresome hours of negotiation upon dozens of the details of industrial life from rules of job transfer to the methods for selecting arbitrators.

It is with these details of what Slichter once called industrial jurisprudence that this book chiefly deals, although there is also considerable analysis of fringe benefits. After a brief discussion of the issues for management in industrial relations, such as the need for reorganizing management to deal with the union, the authors present their findings on the impact of the union

¹ This is a review article of *The Impact of Collective Bargaining on Management*, by Sumner H. Slichter, James J. Healy, and E. Robert Livernash. Washington, D. C.: The Brookings Institution, 1960. Pp. XV, 982. \$8.75.

² E. R. Livernash, "Brookings Research Project on the Influence of Unions upon Management: A Reappraisal of Union Policies and Industrial Management," *Industrial Relations Research Association, Annual Proceedings*, 1959. p. 180.

³ Neil W. Chamberlain, *Collective Bargaining* (New York: McGraw-Hill Book Company, 1951), p. 121.

upon management policies concerning hiring, training, seniority, promotion, work scheduling, subcontracting, and technological change. In addition to an adequate factual discussion, the authors explain how unions have been able to force many restrictions upon management. Apparently in the early days of bargaining, inexperienced management representatives did not always realize how much trouble could arise from such innocent sounding words as "by mutual consent," which gives the union an effective veto power over a management decision. Likewise, arbitrators have allowed the union to move into areas formerly management's sole responsibility by their interpretations of vague clauses in the labor contract. Numerous examples of such decisions are given.

Although the book is not divided into sections, a second group of chapters might be called the section dealing with fringe benefits. The chapter on pensions is particularly valuable in giving a good but brief historical review of pension development, followed by a discussion of such problems as vesting, benefit formulas, and eligibility. Throughout the chapter union influence on these policies is stressed, and in the final pages the chief issues in negotiation are analyzed. Other chapters in this section give adequate discussions of health and welfare plans and employee benefits. Apparently, there is no doubt that union pressures have been a cause of the rapid development of fringe payments, although the fact that the War Labor Board approved the exemption of benefit plans from wage stabilization requirements played an important part in spreading health and welfare plans throughout American industry.

To this reviewer the section of the book dealing with wage incentives is most interesting. In fact, along with several other groups of chapters, these chapters could have been made into a book by themselves. Possibly the most troublesome area for negotiators is that involving work standards which are the basis for incentive systems and measured-day work plans of payments. Industrial engineers with a propensity for thinking that standard times carried to four decimal places must be accurate meet with union negotiators who term any attempt to increase the amount of work as a stretch-out to be resisted at whatever cost. No wonder there has been trouble in this area.

The authors have made a number of surveys

to discover how current union policies differ from those existing in 1940 and have analyzed the variety of experiences which management has undergone trying to operate incentive plans in organized plants.

Although little preaching is found in this section of the book, there are nevertheless certain lessons about management procedures which can be drawn from the studies described. One lesson is that monetary reward cannot always be counted upon to increase effort. Sociological and psychological factors have had their effect upon the economic pull of a wage incentive and, recognizing this fact, many firms are modifying their systems.

Another lesson for management is that the best system can be wrecked by failure to provide constant checks. Anyone who has helped administer incentive plans is well aware that workers have a way of shortening processes and that foremen seem to dislike reporting changes of method. The results of such activities are likely to be what the authors call "demoralized incentive plans." Systems installed for cost control and for reducing unit cost may develop into situations with costs soaring far above a competitive average. Eternal vigilance is the price of an "efficient incentive plan," as industrial engineering consultants will insist; yet once the expert has departed or has been on the job long enough to be relegated to the position of a common man, management often tries to get the benefits without paying the price of vigilance.

Throughout these chapters the authors describe and analyze effectively: why some plans fail and others succeed; why some unions accept and others reject incentives; why measured-day work seems more popular; and what the general union-management conflicts may be. This is altogether an admirable section.

In the same section may be included two chapters dealing with wage evaluation and general problems of wage structure. The steel industry and the West Coast paper industry are given as two reasonably successful examples of union-management cooperation on job evaluation programs. Based upon these studies (one by Jack Stieber, the other by J. M. Tedford) the authors develop certain principles for proper programs and point out difficulties arising during collective bargaining. In the chapter on wage structures, one finds that "The influence of unions has clearly been one of minimiz-

ing and eliminating judgment-based differences in pay for individuals employed on the same job" (p. 602). Apparently, "defending a merit system against grievances has not, it seems, appeared to be worthwhile. The path of least resistance has been to develop automatic or nearly automatic increases" (p. 606). The authors might have added that with current arbitration procedures in force, trying to use managerial judgment in such cases merely means turning over to a college professor the right to substitute his judgment for the judgment of responsible management.

"Few areas of personnel policy," say the authors, "have been more significantly affected by collective bargaining than management's administration of employee discipline." In Chapter 21 facts and policies relating to discipline are analyzed. Actually the protection of workers from arbitrary management decisions has been a real contribution of unions. Economists may argue that real wages would be the same with or without unions, but no one can deny that "labor unions must be given credit for initiating directly or indirectly less draconic systems of discipline" (p. 624). In this area, too, one must never underestimate the power of arbitrators, who have ruled upon the meaning of "just cause" in discipline cases and have insisted upon steps in discipline procedures.

One of the problems discussed in this chapter is the dichotomy between uniform treatment in discipline as against judgment about each case. How much weight, for example, should be given to long unblemished service if the worker breaks a rule requiring immediate discharge? An unorganized plant may use judgment in such situations; a unionized plant may be afraid to deviate from strict rules, knowing that during the next arbitration case that deviation will surely be used against the company. It is a frustrating experience to a person presenting the company's case.

Another problem involved in discipline in an organized plant is the locus of authority. American management is discovering that there must be some check upon the supreme authority of the foreman, if the company is to steer clear of union difficulties. Many feel that such checks upon foremen are proper, yet there are management problems involved, such as requiring a foreman to take responsibility without authority. The authors give examples of how these

problems have been handled, and in a later chapter discuss the foreman's position in more detail.

To those who have never worked in an organized plant it will come as a surprise, as it apparently did to the authors, that despite no-strike agreements with concomitant arbitration of grievances, wild-cat strikes and other union pressures are far too common in American industry. This chapter presents an excellent study of the causes for such pressures, the difficulties of handling them, and methods used to minimize their number. The problems involved are many. How, for example, under the union shop provisions of the Taft-Hartley law which allows expulsion from the union only for non-payment of dues, can a union be expected to discipline recalcitrant members? Persuasion is the only method which can now be used. But what good is union persuasion if management has a record of making concessions because of force and threats. So long as management concedes, just so long the unions will bring pressure. The authors suggest that if management takes a firm, but not arbitrary, stand some of the problems of pressure will decrease. Even such a policy, however, presents difficulties. It is often hard to provide proof of guilt which an arbitrator will accept, and probably few arbitrators will take as firm a stand as George Taylor did some years ago (p. 687). Two discharged employees were returned to work. Their mates, who in violation of the contract had struck in support of the discharged workers and had themselves been discharged, were denied reinstatement. From the production management's viewpoint, however, there is very little profit from a decision which effectively closes the plant.

Part of the protection function of unions is carried on through grievance procedures now generally terminating with arbitration. The chapters on grievances consider the nature of grievances, union and management policy with respect to them, and the methods used in American industry for settling them. Since a considerable number of grievances arise out of disciplinary actions, many of the union-management problems considered in these chapters are similar to those discussed in the chapters on discipline and wild-cat strikes. One would even wish there were more references to the earlier chapters, particularly upon the relationships of

grievance procedures and wild-cat strikes. The question could be asked, for example, whether it is worthwhile using long and expensive grievance procedures, when union pressure is likely to be the deciding factor. Perhaps the Australian system has its points. Manufacturers in that country are acquainted with all of the pressure tactics here described as well as with some that American unions have not even thought of. On the other hand Australian manufacturers do not have grievance procedures with arbitration as the final step. Of course not all grievances go to arbitration in this country nor is union pressure involved in each instance. Furthermore, as the authors say, "One of the important accomplishments of trade unions has been the acceleration of the inevitable long-run shift from personal management to management based on rules and policies" (p. 719).

The chapters on labor arbitration are excellent. "The literature has been so vast within recent years," say the authors, "that one might wonder whether anything new or valuable can possibly be said about labor arbitration" (p. 741). In the next two chapters they proceed to show that although their ideas may not be new, their analysis is valuable. Of particular interest is the analysis of the arbitration experience of three automobile companies. Through the years all three companies have used arbitration less frequently; yet from the earlier experiences one learns that at least in large plants the mediator type of arbitrator is likely to increase the use of arbitration and that a company which considers arbitration "litigation," may well have better experiences with the process. Another point which stands out, however, is that the type of union and the type of management can both affect grievance arbitration, no matter what other factors are present. This point is hardly an earth-shaking idea, but in our desire to discover cause and effect relationships, we often try to find existing correlations but sometimes leave out the human beings whose perverse actions have a way of wrecking expected situations. In another chapter this point is well made. "Where labor relations are good, it is difficult to argue about the organizational structure, regardless of its nature."

In another important section of analysis are discussions of some problems of grievance arbitration. Management, conclude the authors, must carry much of the blame for arrogation of

authority. Judicial-type arbitration must be based upon clear contract language or the arbitrator may be tempted to take authority no one wanted him to have. Arbitrators who let themselves go when writing decisions should carefully study the short statement on the dangers of *dicta*, which occasionally do more harm than good. A good discussion of the role of precedent in arbitration concludes these chapters. No longer do students expect the development of a common law of labor relations from the collected decisions of arbitrators, although both company and union representatives still like to pile up footnote references to previous decisions.

The final chapters of the book deal with certain special operational problems. How, for example, can a unionized high-cost company ever again become competitive, and what happens to traditional line and staff relationships when labor relations experts become part of the organization? Finally the authors discuss the negotiation of union-management contracts. This chapter, largely descriptive, is needed to complete the picture of management operating under collective bargaining.

Throughout the book there are numerous references to specific management problems. In the concluding chapter these references are well summarized. With the growth of collective bargaining has come "(1) the narrowing of the scope of managerial discretion, (2) the development of management by policy, (3) the introduction of important changes in management structure, (4) diversity in the character and results of collective bargaining, and (5) the growth of adjustment in contract administration" (p. 947). Some of these developments have improved management. Others have so lessened management responsibility that the union and the arbitrator seem to be making most of the important industrial relations decisions. For better or worse, the changed conditions are now part of the American industrial system. Wise management people have made their adjustments to them.

It would be a miracle if a book of this size were of equal quality throughout, and no miracle has occurred. The theme, that is, the impact of collective bargaining on management, often gets lost and at times we are confronted with a book on "how to do it." In some instances value judgments are freely given, such

as the condemnation of the National Labor Relations Board for its lack of stand on racial discrimination, or the statement "This is a regrettable development" used with reference to certain types of superseniority. In other sections of the book there are exceptionally good analyses of particular labor-management problems. Despite the lack of a Scarlett O'Hara to enliven these nearly one thousand pages, the book should be studied not only by academicians but also by union officials and management. One of the authors has said of this book, "Much of this present study is an attempt to describe more adequately the facts of diver-

sity."⁴ There is no doubt the book succeeds in this endeavor. In addition many fruitful suggestions are apparent, among which should be included the following: Let union officials learn the need for adjustments instead of pressing every advantage. Let management learn that firm but fair decisions are necessary whether there be unions or not. Let both sides learn that "The experience of high-cost plants shows the tendency of both unions and management to put their short-run interests ahead of long-run interests."

⁴ E. R. Livernash, *op. cit.*, p. 185.

EPISTEMOLOGICAL PROBLEMS OF ECONOMICS*

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This book is like a voice from the past. Indeed, this is a proposition with which, if it were uttered in a properly respectful tone, I should expect Professor von Mises to agree; and neither of us would have in mind primarily the fact that the present text is an English translation by George Reisman of a collection of essays first published in Jena in 1933 under the title *Grundprobleme der Nationalökonomie*. The point is rather that, although the words are those of a contemporary writer, the doctrines are those of Menger and Böhm-Bawerk.

Professor von Mises is of course aware of the prevalence of heresy. But, as he points out in the rousing peroration of one of the present essays (originally delivered before a meeting of the *Verein für Sozialpolitik* at Dresden in 1932), the heresies of the twentieth century serve only to enshrine the true doctrines of the Austrian School.

Is it not remarkable [he writes] that this subjective theory of value, which in the German-speaking countries is condemned and decried as heresy, which was pronounced dead a thousand times, does not, for all that, cease to occupy the center of scientific debate? Is it not astonishing that the ideas of Menger and Jevons still arouse general interest, while those of all their contemporaries have long since been forgotten? Does anyone still dare today to mention in the same breath with Gossen, Menger, or Böhm-Bawerk the names of those contemporaries who during their lifetime were much more famous? We feel it is a treatment thoroughly worthy of a great subject that today books still appear that are devoted to the struggle against the teachings of Menger and Böhm-Bawerk. For these theories, which have again and again been pronounced dead, still live. And the proof that they do is precisely the fact that they find opponents. . . . The most striking indication of the authority of a doctrine is the fact that it is the target of many attacks. The marginal utility school proves its sway over men's minds by freely inviting their criticism.

* This essay is a review article on the book, *Epistemological Problems of Economics*, by Ludwig von Mises. Princeton, N. J.: D. Van Nostrand Company, 1960. Pp. 239. \$5.00.

Such being the case, the only function of these essays is to restate the classic doctrines and to expose the folly of their various critics. By the author's own declaration, nothing new is added. Thus he opens one of these pieces with the statement:

The following essay makes no claim to originality. It presents nothing that was not already contained at least implicitly in the writings of the founders of the modern theory and explicitly in the works of present-day theorists and in my own writings.

He does seek to rescue the Masters from various misinterpretations, chiding them gently for not having made the "subjective theory of value" sufficiently explicit. But his principal concern is with the critics.

Very few of these are contemporary writers. In one passage Gunnar Myrdal is chided for having said in *Das Politische Element* that the interests of trade unions include more than wages, thus in effect dodging "the irrefutable proof provided by economics that trade-union policy can never permanently raise wages for all workers"; and in his preface to the present translation Professor von Mises calls attention to a slight alteration in the wording of this passage in the Streeten translation of the Myrdal book which appeared twenty-one years later, noting that "Mr. Myrdal . . . does not mention that my criticism of his analysis . . . induced him to change essentially the wording of the passage concerned." But prevailingly the targets are Weber, Spann, Sombart, and many other Continental writers, most of whom are scarcely known at all in this country.

Granted that all of this critical disputation is extraordinarily erudite, the question still remains: Who among contemporary American economists is interested today in Vierkandt's "instinct sociology," or Hahn's theory of the origin of tillage? In this connection a footnote which seems to have been supplied by the translator to explain the word *Methodenstreit* to American readers poses an interesting paradox.

In this footnote *Methodenstreit* is defined as:

A discussion concerning the method and epistemological character of economics carried on in the second half of the eighties and into the nineties of the last century between Carl Menger and his supporters on the side of the Austrian School of economics and the proponents of the German Historical School, led by Gustav von Schmoller.

Since Professor von Mises is an avowed supporter of Menger, we should not be surprised to find that the *Methodenstreit* is still going on. But what interest in the errors of Vierkandt, or even Schmoller, could reasonably be expected of readers to whom the word *Methodenstreit* is unfamiliar?

Notwithstanding the suggestion of this strange footnote, all the essays in this volume are addressed to professional scholars. However, in defending the classic (more technically, neo-classical) doctrines of the Austrian School, Professor von Mises is motivated by something more than filial piety. The Austrians were the most extreme exponents of what Professor Galbraith has called "automaticity," and their descendants are now the most dedicated defenders of the faith. They are so from conviction, and for obvious reasons.

By historical coincidence one of the major developments in the evolution of economic theory occurred simultaneously with the flowering of Marxist socialism. The discovery that the concept of utility—itsself as old as the Greeks—could be conceived marginally, and so could be conceived to be quantified by price, supplied what Alfred Marshall later identified as the opposing blade of the shears of automaticity. It now appeared that in the automatic operation of the self-regulating market utility and cost (later refined into productivity) cut against each other to shape an economy which could thus be "proved" to be more efficient, more wholesome, and more just than any arrangement the socialists could dream up. In these circumstances it is hardly surprising that neoclassical economic theorists should have been the staunchest—or at all events the most doctrinaire—opponents of the Marxists. This was true of the masters whom Professor von Mises venerates, and it has been true of Professor von Mises himself throughout his academic career.

But the world has inconsiderately refused to stand still. The assumptions of *ceteris paribus*

are perpetually set at naught by technological development and by general social and political evolution. These developments are of course interrelated. As the economy has grown in magnitude and complexity, the responsibilities of government have likewise grown. In a sense this is nothing new. Growth always implies previous growth. As every scholar knows, there has never been a time when government did not "intervene" in economic life of the community, and no economist has ever proposed that the economic functions of government be dispensed with altogether. Indeed, the rubrics under which Adam Smith classified the proper functions of government—including as they do the duty "of protecting, as far as possible every member of society from the injustice or oppression of every other member of it" and the duty "of erecting and maintaining those public institutions and those public works, which, though they may be in the highest degree advantageous to a great society, are, however, of such a nature that profit could never repay the expense... [and] those for facilitating the commerce of society, and those for promoting the instruction of the people"—are sufficiently broad to embrace all the measures which have been undertaken or attempted by all the "Deals," Old, New, and Fair.

This is not to say that all governmental interventions in the economy have succeeded, and that is regrettable. Governments, like private citizens, have a duty to succeed. But no one ever succeeded without trying. Probably the price support programs for farm products have been the least successful of recent governmental efforts. But the object of the effort, as the word *parity* suggests, has been protecting farmers from injustice or oppression and, by sustaining farm income, facilitating the commerce of society.

In short, as virtually all economists now recognize, we are living in a mixed economy and almost certainly will continue to do so. Taking thought for the morrow is now generally accepted as an inevitable consequence and condition of economic growth. This does not mean, as Professor Hayek has suggested, that we are *against* competition. Wherever genuine competition is possible, it is probably desirable. But only probably! One of the first lessons we learned is that in capital-intensive industries like railroads competition may be suicidal. We

have also learned that modern conditions do not generate effective competition quite as automatically as Adam Smith expected when he advised municipal authorities against calling together people who were in the same trade lest they should come to know each other and so be enabled to conspire together. Under modern conditions it would seem that General Electric has somehow become aware that Westinghouse is in the same business. Thus a considerable number and variety of regulatory Acts and agencies have come into existence. No one is entirely satisfied with the provisions of the Acts or the performance of the agencies. But few indeed are the economists or statesmen who advocate a return to the *status quo ante*.

By far the most important lesson we have learned from by far the bitterest experience is that a downward spiral of unemployment, reduced sales, curtailed production, and epidemic bankruptcy can bring a great and rich economy to the verge of total collapse. Again, no one is entirely satisfied with the "built-in stabilizers" which have been devised as safeguards against deep and prolonged depression. But here also few indeed are those who advocate a return to the *status quo ante*.

This, I judge, is what Professor Galbraith meant when he remarked, in *Economics and the Art of Controversy*, that "Among professional economists there are few defenders of automaticity left." Nevertheless public resistance to governmental "intervention" is still very strong. It would be an exaggeration to say that the American people hold stubbornly to the belief that private business can do no wrong and government can do no good. But "private enterprise" and "profit motive" are certainly not disparaging phrases in the vocabularies of the great majority of Americans. At the same time the prevailing attitude of Americans toward government, and especially the Federal Government, is one of suspicion, not to say aversion. If the community acquiesces in the "interventions" that are now accomplished facts—and it does—it nevertheless does so grudgingly and reluctantly and with the tacit hope that no further compromises will be necessary.

Doubtless these attitudes have many sources. The long struggle of the Western peoples to free themselves from feudalism and then from the tyranny of absolute monarchs has left enduring marks. At the same time the opportunities to

getting ahead which an expanding economy has provided since late medieval times have profoundly affected the outlook of the Western peoples, and especially of Americans. The prodigious popularity of the economic doctrine of automaticity derives from the fact that it seems to prove what everybody wants to believe anyhow. It still does so. The general public—not merely illiterates but the majority of reasonably well-informed people—still cherish the impression that the great scholars of the past have proved that the economy goes best by being let alone. This is what they mean when they say they believe in free private enterprise, or in "the law of supply and demand." They have only the vaguest idea of what they conceive the Great Economists to have proved. But they know that it coincides with their suspicion of Big Government in general and their impatience with the specific regulations to which they themselves are subject, and that is enough.

It is to this public that Professor von Mises' present volume is indirectly addressed. I say indirectly because the general public is highly unlikely to be attracted to a book entitled *Epistemological Problems of Economics*, or to wade through these recondite controversies. The general public will learn of this confirmation of their views by a Great Living Economist through the pages of various publicists, such as Mr. Henry Hazlitt, Miss Ayn Rand, and the editorial writers of the reactionary press.

Even such professionals are unlikely to toil through these tortuous arguments. But here as elsewhere in Professors von Mises' writings they will find quotable gems: outright, unqualified assertions of the doctrine of which, as Professor Galbraith says, there are few professional defenders left, and equally outright castigations of heresy. Thus in the essay on "The Psychological Basis of the Opposition to Economic Theory"—not Austrian theory, or neoclassical theory, but theory—after charging salaried scholars who "...are relieved of the necessity of earning a living on the market" with looking down "with contempt upon the businessman," he declares that "This contempt turned to growing rancor when, with the spread of capitalism, entrepreneurs began to rise to great wealth and thus to high popular esteem." But this is not all.

The very fact that many of these people in government service are related to businessmen by

blood or marriage or are closely connected with them by school ties and social acquaintance exacerbates still further these sentiments of envy and rancor.... And now these educated classes, filled with envy and hatred, are presented with a theory...

But now it is no longer a mere theory. It is "the science of economics," and it "proves" that:

Price rises, increases in the rate of interest, and wage reductions, which were formerly attributed to the greed and heartlessness of the rich, are now traced back by this theory to quite natural reactions of the market to changes in supply and demand.... What was condemned as a moral injustice—indeed, as a punishable offense—is here looked upon as, so to speak, a natural occurrence. Capitalists, entrepreneurs, and speculators no longer appear as parasites and exploiters, but as members of the system of social organization whose function is absolutely indispensable. The application of pseudomoral standards to market phenomena loses every semblance of justification. The concepts of usury, profiteering, and exploitation are stripped of their ethical import and thus become absolutely meaningless. And finally, the science of

economics proves with cold, irrefutable logic that the ideals of those who condemn making a living on the market are quite vain, that the socialist organization of society is unrealizable, that the interventionist social order is nonsensical and contrary to the ends at which it aims, and that therefore the market economy is the only feasible system of social cooperation.

After this Professor von Mises scarcely needs to conclude, "It is not surprising that in the circles whose ethics culminate in the condemnation of all market activity these teachings encounter vehement opposition." This is one of those remarks which seem to invite illicit conversion. The suggestion seems to be that anyone who opposes any of this must therefore condemn all market activity, an all-or-none proposition strictly analogous to Professor Hayek's italicized declaration that planning is either *for* competition or *against* it. Thus the reader is invited to contemplate the mixed economy in which we now live in the spirit of the farmer's comment on the giraffe: "There ain't no sech animal!"

BOOK REVIEWS

Techniques of Monetary Control. By Joseph Aschheim. Baltimore, Md.: Johns Hopkins Press, 1961. Pp. 164. \$4.50.

Because they influence so directly particular groups of taxpayers or beneficiaries of public spending, the instruments of fiscal policy have been subject to meticulous examination. By contrast the instruments of monetary policy, differences among which are well-nigh invisible to the general public, have rarely been subject to close scrutiny, especially for comparative purposes. Economists will be indebted to Joseph Aschheim for his intensive study of contemporary, including potential, instruments of monetary policy, and for expressing in vigorous style his own conclusions about their relative effectiveness and desirability: Aschheim has written an excellent and forceful book which is scholarly in the sense that it exhibits a mastery of many details of monetary control. In successive chapters are treated: (1) open-market operations vs. reserve requirement variation, (2) security reserve requirements, (3) the bills only controversy, (4) the rediscounting mechanism, (5) moral suasion, (6) the "financial intermediaries" controversy, and (7) regulation of time deposits.

These subjects are not considered discretely, but within the framework of an over-all evaluation which is provided in Chapter 1—in itself, a very model of condensation and lucidity. Put in its briefest form, Aschheim's position is that, in a society with a well developed open market and a substantial supply of government securities, open market operations are so vastly superior a weapon compared to other instruments that the latter should be either eliminated or de-emphasized. Open market operations are effective not only in influencing the reserve position of the banks and their willingness to lend, but also in manipulating the interest rate structure—since the central bank will be in contact with all sectors of the capital market through the widespread holding of the government debt. Consequently, Aschheim is acid in his comments on the "bills only" policy, by which the System supposedly tied its hands and refrained from influencing the interest rate structure, thus reducing its over-all effectiveness and forcing recourse to "inferior" techniques of monetary control.

As may be judged, this is a polemical work, veritably bristling with provocative comments—Aschheim not being a man to pull his punches. There is considerable value in such a work. Nevertheless, Aschheim occasionally reaches his conclusions by ignoring offsetting forces and selecting

only the evidence which supports his position. A trivial but clearcut instance is that the reduced cost of debt service, mentioned as an advantage of higher cash reserve requirements vis-a-vis security reserve requirements, is unmentioned in comparing reserve requirements changes and open-market operations. Most instruments have both advantages and disadvantages and in making the final evaluation for policy purposes both should be considered. Aschheim, however, seems to view such issues rather in terms of sharper contrasts than the evidence warrants.

In a brief review it is impossible to discuss the many strong points. Of especial merit is the treatment of security reserve requirements, financial intermediaries, and the desirability of floating the discount rate above the federal funds rate. As is commonplace in reviewing, however, emphasis here will be placed upon certain major contentions of the author about which doubts may arise. The crucial element in the study is the emphasis on the paramountcy of open-market operations. In asserting their superiority to reserve requirement variation, Aschheim achieves his force by ignoring certain offsetting factors which would weaken his argument. He argues that, because of the liquidity and income effects, raising reserve requirements is less effective than restrictive open-market operations, since the former would induce banks to switch more government securities to private loans. This point is unproved because the fact that an increase in reserve requirements reduces bank lending power and forces the banks to sell, without replacement, some government securities remains unmentioned. Consequently, the information that the banks would have an incentive to switch to government securities, were their lending power unaltered, does not tell us very much. The effects of increasing reserve requirements are different from those of higher reserve requirements already in existence. The weakness of Aschheim's analysis on this point is hidden by his shifting to a discussion of the shock of increases in reserve requirement on the banks.

Related to this supposed superiority of open-market operations are Aschheim's strong views on the "bills only" policy. No doubt the System has been somewhat rigid in this policy and has weakened its effectiveness in responding to depression conditions, but Aschheim greatly exaggerates the impact that the Federal Reserve, with its limited purchases and sales, can have upon the interest rate structure. Purchasing long-term securities can speed up somewhat the decline in long-term rates

in recession, but it cannot permanently alter the interest rate structure in substantial degree. This has been confirmed by the evidence of the last three months under the Kennedy administration. Aschheim goes back to 1958 to show that long-term rates did not decline very much while short-term rates declined very rapidly. But such a response is characteristic of depression conditions and one may retain one's doubts how much more rapidly the long-term rate would have fallen had the Federal Reserve intervened. Moreover in his discussion of theories of the interest rate structure, Aschheim points out that all such theories suggest that long-term rates may be sticky, relative to short rates, but he does not indicate that there is a question whether anything can be done. Under the expectational theory, as developed by Keynes, it will be hard to bring down long-term rates whenever the public feels it is likely that long-term rates will rise in the near future—this being an impediment to the Board at the present time.

Even in some places where the analysis is most penetrating, it remains marred by technical weaknesses. For example, the plea that the re-discount rate should be floated above the federal funds rate is much weakened by an irrelevant argument about the need for a penalty rate. In the London market the central bank lends directly to the discount houses which own commercial and treasury bills exclusively; consequently it is easy to impose a penalty rate. In the United States, where credit is extended directly to commercial banks, no rate would be a penalty rate unless it were above the customer's loan rate which might have to be as high as 12%—certainly a few percentage points above the federal funds rate would still leave the banks with incentive to borrow and re-lend to business customers—if Regulation A did not exist. He argues against the "bills only" policy and the availability doctrine by asserting that they are in harmony with each other, without giving appropriate attention to the fact that the principal opposition to the "bills only" policy within the System has come from the very people who developed the availability doctrine. In criticizing Federal Reserve lending to the commercial banks during prosperity in light of traditional 'lender of the last resort' concepts, Aschheim fails to mention that part of the mechanism by which the Federal Reserve hopes to impose restraint on the commercial banks in periods of prosperity is to force them into debt, thereby making them more susceptible to central bank influence. Finally Aschheim argues by implication that low substitutability exists between long-term and short-term government securities (accounting for the defects of the "bills only" policy) and between demand deposits and other financial assets (explaining the defects of the

Gurley-Shaw type of approach), but he fails to raise the question whether there is a high degree of substitutability between public and private long-term instruments. If low substitutability exists between them—which it seems likely Aschheim should maintain, if he is to be consistent on this question—then manipulation of the interest rate structure through reversal of the "bills only" policy, even if it brings down long-term rates on governments, will not generate much private investment.

These, of course, are all questions which are prompted by the excellence of Aschheim's work. Those interested in monetary economics will benefit from reading the book. In an argumentative work, much can be justified, and polemics are good for the profession.

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Linear Programming and the Theory of the Firm.

By Kenneth E. Boulding and W. Allen Spivey.
New York: Macmillan Company, 1960. Pp. ix,
227. \$6.00.

This collection of essays is largely pedagogic in nature in keeping with the purpose of the Ford-sponsored summer seminar for college teachers out of which it grew. The seminar was directed by Professor Boulding with the assistance of Professor Spivey, but much of the book was written by participants who do not share credit on the cover.

Boulding's short essay is a useful sketch of recent developments in the theory of the firm, including linear programming, game theory, and organization theory. The heart of the book, however, is the three following essays, two by Dr. Spivey and one by Drs. Yuan-Li Wu and Ching-Wen Kwang.

Professor Spivey explains in his first piece those mathematical concepts which are basic to the use and understanding of linear programming techniques. Although it is strictly mathematical in nature, no assumption of prior mathematical knowledge is made. It is clearly and carefully written and the mathematical novice (your reviewer being one) who is willing to work at it should have no appreciable difficulty in understanding the fundamentals of set and vector theory. In his second essay, Dr. Spivey presents the principles of linear programming in equally clear terms. He is an able expositor.

The essay by Drs. Wu and Kwang compares the marginal analysis of the firm with the programming approach. Five cases are discussed in which input and output prices are given, but in which the number of products, processes, and/or fixed factors differ. In general, two graphic solutions, the marginalist analysis, and a linear programming approach

are presented for each case. This becomes a little monotonous after a while, but the practicality of programming and the generality of marginalism are both exposed. "Marginal analysis can be applied to indicate the logical properties of the optimum solution [but fails]... to provide a convenient method of arriving at the optimum solution" (p. 157). One must object, however, to the derivation of a "conventional" marginal cost curve by assuming non-repetitive processes which must be ordered in time (mining where one first gets better and then peters out) (pp. 124-126). A final section in which prices are permitted to vary with the quantity sold reveals that many of the interesting theorems of linear programming do not hold in the more realistic case.

Dr. Hans H. Jenny turns his attention to operations research. After a rambling introduction and a brief summary of the "Toll-Booth Case" as an example of effective operations research, he offers some casual comments on the possible effects of an extensive use of O. R. on such things as unemployment, inflation, cyclical patterns of production, and social responsibilities.

The essay by Dr. C. Michael White, "Multiple Goals in the Theory of the Firm," is a well written account of a small selection of writings on the nature of profit and alternative goals. Among the latter he considers the maximization of sales volume, of the value of assets, and of liquidity ratios. His distinction between profit and profit potential makes good sense of these 'non-profit' objectives. The piece was apparently written independently of Professor Baumol's book and *Economica* article in which the sales maximization hypothesis is developed.

Professor Sherrill Cleland's concluding essay departs entirely from the linear programming theme to offer some suggestions on reformulating the theory of the firm. The basic idea advanced is that the analysis of resource allocation would be improved if less weight was assigned to the market mechanism and more to management's response to external stimuli.

The book could be improved with additional editing. Inaccuracies in several diagrams (pp. 9, 62, 63, and 75) and some awkward phrasings mar the general effect. On the whole, however, it is a useful introduction to linear programming, and the bibliography contains helpful suggestions for further reading.

EDGAR O. EDWARDS

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Trends in Government Financing. By Morris A. Copeland. Princeton, N. J.: Princeton University Press, 1961. Pp. xxvi, 210. \$5.00.

In essence this book by Morris A. Copeland of

Cornell University examines trends in governmental indebtedness in the United States. Its title is, therefore, particularly to the non-specialist, more comprehensive than its emphasis. The analytical monograph, begun in 1950, is one of a series prepared by various authors participating in an inquiry into long-range trends and prospects in capital formation and financing initiated by the National Bureau of Economic Research with financial support from the Life Insurance Association of America.

With a few exceptions, data on which analysis is based have not been carried beyond the year 1954. Borrowing by the national government has been examined principally since 1890, and by state and local governments since 1910. Organized and written in a style useful primarily to advanced students of public finance, the book is nevertheless a significant contribution to the understanding of the increasing importance in the economy of governments as borrowers. The rise in their share of borrowing, threefold in little more than half a century, is far greater than their share in capital formation.

Professor Copeland has, in the main, carefully refrained from discussing the wisdom or efficiency of governmental borrowing. His analysis deals primarily with the volume of financial requirements, by which he means "the demand for funds in the loan and security markets, or government borrowings." Even more specifically he is concerned principally with net debt, "the excess of what a government owes others over what others owe it" (p. 3). While flowing logically from this somewhat rigid definition, the exclusion of social security funds (for example) from debt is perhaps the most controversial methodological decision made by the author. He contends (pp. 25-26) that "there appears to be no reason for saying that a future obligation to pay benefits constitutes a present liability—and even if one grants there is such a present liability there is no agreed-upon way to determine its size." Moreover, he does not share a concern that governmental borrowing has, necessarily, an inflationary effect.

At the end of 1954 more than 90% of the net debt of the national government had been incurred during war emergencies. Yet the proportion of expenditures "deficit financed" in major wars declined continuously from the War of 1812, a downward trend reflecting at least in part improved fiscal procedures. Debt reduction in the nineteenth century Professor Copeland regards as politically accidental. Customs duties were the principal item in national revenue and could be maintained at high levels more easily than internal revenues, facing political pressure for tax reduction, could have been maintained. Reductions in the twentieth

century have been, he thinks, in part the accidental result of lag in taxing procedures. With the income tax now the principal source of national revenue, debt reduction is less likely: even a minor recession might entail net debt increase. Almost 10% of the net debt at the end of 1954 could be ascribed to countercyclical borrowing, part of the growing governmental function of stabilizing the economy; and in the absence of preventive fiscal procedures "future business cycles will often add to the net debt total" (p. 179). The pressures for debt reduction are weaker than the drive for increased money incomes, for increased governmental activities and services, and for hold-the-line or decreased-tax policies.

These and other findings are discussed with careful detail with patterns of "financial requirements" and policies for meeting them, in national and state jurisdictions, the principal themes. Because of the scope of the volume, it is understandable that there is relatively little detailed analysis of the social impact of governmental centralization and of the increasing governmental sector in the economy. A more detailed analysis of debt service, the current cost of carrying debt, might be expected.

In many respects this book is an historical analysis of some borrowing aspects of public finance. Admittedly partial rather than complete, it is a highly valuable reference document. Summaries at the ends of chapters and a final chapter on "Trends and Prospects" are most helpful. In addition to strictly historical data there are penetrating analyses of various types of budget deficits which may be employed by fiscal experts. There are also many useful insights about fiscal practices, although they are often almost buried in "fine print" or in technical language. The most encouraging moral implication is the record of decreasing fiscal differences between regional and varying population groupings and the report of ever-sounder fiscal procedures. The adequacy and effects of policies, distinct from procedures, are yet to be tested.

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Full Employment, Inflation and Common Stock.

By Melvin L. Greenhut. Washington, D.C.: Public Affairs Press, 1961. Pp. vi, 87. \$3.25.

Professor Greenhut's little book was written for the ever-increasing number of investors in business in the United States. It is aimed at the layman rather than the economist and is intended to provide an elementary explanation of those economic fluctuations which are of importance to the investor.

In Part I of the book, entitled "The System of Thought," Greenhut provides a standard elementary treatment of national income analysis us-

ing the planned savings—planned investment approach rather than period analysis. National income concepts are defined first. Next a verbal explanation of the progress of depression and of prosperity in terms of discrepancies between planned saving and planned investment is presented. Graphic analysis of national income equilibrium and of changes in national income follow. The section providing the analytical framework closes with algebraic explanations of the marginal propensities to consume and to save and the multiplier.

Part II, "Business Fluctuations," provides an excellent discussion of causes of divergencies between planned savings and planned investment. This is followed by a discussion of causes of the Great Depression and the inflation of the forties and fifties. This part ends with an overly abbreviated look at governmental policies to control inflation and depression.

In Part III, "Forecasting and Investing," Greenhut looks in a cursory manner at forecasting methods. He concludes that the best single forecast affecting the average investor is that moderate inflation will prevail in the United States in the foreseeable future. In the face of this prospect he advises that such an investor seek ownership of the economy's resources through the purchase of stocks.

By and large the analysis presented by Greenhut is sound; however, it appears to contain significant gaps. Most important among these is the absence of any detailed discussion of how the monetary system works and its role in business fluctuations. If, in the interests of brevity a choice were necessary between a monetary approach and the neo-Keynesian approach here presented, in this reviewer's judgment the former would be preferable. It would be more easily understood by the reader at whom the book is aimed and it would get at the more proximate causes of deflation and inflation.

The level of difficulty of various parts of the presentation is somewhat uneven. For example, the reader is expected to follow the intricacies of movements along and shifts in investment and savings curves while at the same time having spelled out for him that $(C)/(Y)$ is the same sort of thing as $\frac{1}{2}$ of $\frac{1}{2} = (\frac{1}{2})^2 = \frac{1}{4}$ (page 20). The chapter entitled "Some Advanced Concepts" would be more readily understandable if it were done arithmetically rather than algebraically.

These criticisms represent differences of opinion regarding what is appropriate for lay consumption rather than faulting of Professor Greenhut's analysis. His attempt to provide an understandable digest of one facet of economic analysis is a worthy one. Along with attempting to convince each other,

it would be helpful if more economists were to make attempts to convince the public.

RICHARD H. LEFTWICH

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Methods of Regional Analysis: An Introduction to Regional Science. By Walter Isard. New York: John Wiley & Sons, 1960. Pp. xxix, 784. \$9.50.

Methods of Regional Analysis is the second volume of "what threatens to be at least a trilogy" of the basic work of Professor Isard in regional science. The totality at present of this major undertaking (as well as Isard's implicit view of the scope and method of regional science) can best be seen in the final chapter. Here four "Frameworks" or "Channels of Synthesis" are presented: 1) an interregional comparative cost-industrial complex-input-output framework; 2) a framework with emphasis on urban-metropolitan structure; 3) a framework incorporating the gravity model; and 4) a values-social goals framework. In *Location and Space Economy* (Vol. I), Isard was concerned with one aspect of the total, namely, modern Weberian location theory, an essential part of regional economics. Vol. II is devoted mainly to the many empirical techniques of regional analysis. Each technique described has a role of its own; and in addition, each may be regarded as an empirical or theoretical building block in the total frameworks.

First of all, then, *Methods of Regional Analysis* is a systematic chapter by chapter presentation of the major techniques of regional economic analysis: of population projection and migration estimation (with Carrothers); of regional income estimation and social accounting (with Cumberland and Bramhall); of interregional commodity and money flows analysis and balance of payments (with Moses); of regional cycle and multiplier analysis (with Moses, Schooler and Bramhall); of industrial location and related measures (with Schooler, Bramhall and Price); of interregional and regional input-output (with Cumberland); of industrial complex analysis (with Schooler); of interregional linear programming; and of gravity, potential, and spatial interaction models (with Bramhall).

For the general student and research worker, this massive compendium is an invaluable handbook and text, representing the best in modern regional science. The analytical techniques are presented clearly so that they can be readily absorbed and applied, although differing degrees of skills are called for, since the techniques run all the way from computing location quotients to assembling and operating input-output and linear programming models. In general, each empirical technique

has a sound theoretical counterpart and each is subjected to vigorous examination for strengths and shortcomings. Each chapter has an extensive, definitive bibliography. And the chapters have the added note of depth and authority provided by the expert associates.

For the advanced student, the most stimulating section of the work may prove to be Chapter 12 (written with Bramhall) on "Channels of Synthesis." The four broad frameworks mentioned at the outset of this review are the means by which various models or systems of models and adjuncts are put together, in particular for the purpose of making general or specific projections of the economic and social variety, which are so fundamental to city planning, to the intelligent pursuit of industry, to the achievement of higher standards of social welfare. The breadth involved is challenging indeed and Professor Isard also uses the chapter to point out to workers in the field that many aspects of regional science which—from his standpoint—represent the major steps immediately ahead.

And finally, for students of economics in general, this outstanding work by Professor Isard represents a scholarly accomplishment of great depth and remarkable versatility.

JOSEPH AIROV

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The Export Economies: Their Pattern of Development in Historical Perspective. By Jonathan V. Levin. Cambridge, Mass.: Harvard University Press, 1960. Pp. xiv, 347. \$6.75.

With the present unrest in so many of the undeveloped and underdeveloped countries this is an extremely timely book. While perhaps not too suitable as a text, it should be valuable as a supplement for courses in International Economics or Economics of Development.

In the first chapter the author goes back to 1497 when Vasco de Gama sailed around the Cape of Good Hope to the Spice Islands. He develops the growth of European commerce with other parts of the world.

He points out that first for centuries the economics of these export nations remained at a pathetically low level for the mass of the population. Secondly, in recent times there has been a growing revolt against these conditions that are bringing profound changes in their economies and promise more for the future.

He points out that because of conditions in these primitive countries the factors of production, except land, had to be imported from abroad. Many people had assumed that local labor would be available but that was not the case. As a result, Chinese and Indian workers were imported.

As far as entrepreneurial and managerial skills

were concerned they were all foreign. This gave rise to serious social problems. Most of the earnings were going into the hands of a few who primarily imported luxury goods.

The capital needed was imported also and the local governments tried to finance themselves from the royalty payments. As a result, they were forced to pledge their incomes far into the future and were frequently in default.

In Chapter 2 Mr. Levin traces the development of the guano trade in Peru from its earliest days through good and bad periods until its final collapse after the Pacific War. He breaks this down into sections dealing with marketing, government and policy. Peruvian Public Finance, Railroads and Bankruptcy, and ultimate collapse.

Chapter 3 deals with the sources of Factor Supply. Again, he uses a historical approach. He traces the labor supply through slavery up through twentieth century migration. He gives the various sources of capital and entrepreneurship.

Chapter 4 brings out the pattern of development. This chapter winds up Part I of the Book.

Part II is entitled the Modern Revolt. He treats the country of Burma and the evolution of the Rice export trade. He shows the development of the Rice Marketing Board and its functions. It deals with its Buying, Selling and Price functions as well as its finances, and its effects on Burmese Economy.

Chapter 6 deals with the instruments of Revolt, including tax policy and the government activities. It also deals with the gradual assumptions by Domestic Factors, including government.

Chapter 7, the final one deals with the Problems and policies of the export economies and their prospects.

The book is well documented and is a scholarly piece of work that fills a real need. It has many charts and tables that are of value.

JOHN C. FITZER

University of Miami

Central Planning in Czechoslovakia: Organization for Growth in a Mature Economy. By Jan M. Michal. Stanford, Calif.: Stanford University Press, 1960. Pp. xiii, 274. \$3.75.

A book of statistics does not read like a romance, nor does the author of the present book expect it to. Indeed, he says modestly at the outset, that people who plow clear through "may feel that...they know more about Czechoslovakia than they ever wanted to know. Like any other reference book, this one should only be used in small doses for specific purposes." It is an excellent book of that class.

The period covered is the first decade of comprehensive central planning in Czechoslovakia, following the Communist takeover in 1948. There is

an appendix on the Third Five-Year Plan, 1961-1965.

The book contains a good deal of comment and analysis between its numerous statistical tables, but little is said about politics, and there is no air of either wide-swinging condemnation or uncritical praise. Thus Michal's book is essentially a statistical record, with analysis, of accomplishments, or lack thereof, in manpower, manufacturing, construction, agriculture, transportation, trade, prices, and income. A special justification for picking this particular Iron Curtain country for such scrutiny is that Czechoslovakia was, even at the time of the Communist takeover, already a "developed," or industrialized country, which most of the Communist countries have not been. Thus the analysis is of what central planning could do under already industrialized conditions.

Throughout, comparisons are given not only with five other centrally-planned economies (East Germany, Hungary, Poland, USSR—and Yugoslavia as a special case), but also with the same number of freer, or less centrally-planned ones (Austria, France, West Germany, United Kingdom, United States). This seems a good selection of countries for the comparisons. Austria, for instance, is included "as an example of a small neighboring country with similar consumption habits." And, because of such international data embodied in many tables, the book has usefulness for certain comparisons between other pairs of countries, like the USA and the USSR.

On that question the social scientist always has to ask, How accurate are these statistics?—especially when they come from a part of the world we suspect is not wholly dedicated to the truth—Michal has this to say: "...The author has discovered no large-scale intentional distortion of the basic figures....no bogus figures for publication only. However, the way of collecting statistical data may lead to some distortions even of the basic figures. Production data are given an upward bias by the tendency of industrial management to over-rate output in order to obtain premiums for over-fulfilling the plan;...rejects...are...included in output figures....Data on civilian consumption include some basic foods used in export industries, etc. When allowance is made for these limitations of the quality of data, the basic Czechoslovak figures can be considered as reasonably reliable. The index numbers and other relative figures, however, are subject to more serious qualifications, as described in the individual chapters of this book."

Here are a few conclusions gleaned from the book, though in fairness to Michal and his care in qualifying his tabulations and statements, the book itself should be consulted before very heavy use of the sample conclusions here:

Under Czechoslovak law, men under 65 and

women under 60 (except the sick, and housewives with small children) must work. The proportion of what we would call "gainfully employed" males is only a little more, and of females about half again more, than in the United States.

The existence of any unemployment is officially denied in Czechoslovakia, but Michal estimates that hidden unemployment has averaged about two percent of the working time. It takes a variety of forms, one of them being the worker being retained on the payroll though not working, because of (for example) a shortage of raw materials.

Over the 10-year period, 1948-58, more than four-fifths of gross capital investment was devoted to developing capital goods output, and less than one-fifth to developing consumer goods output. "Czechoslovakia has become one of the most industrialized countries in the world, with special stress on heavy industry, as illustrated by its having the third highest per capita consumption of energy in Europe."

Farming in the limited private sector is more productive (per man or per hectare) in some agricultural branches (livestock raising, for instance) than is effort devoted to collective farming in the same branch. This in spite of some disadvantages under which the private farming labors, such as being done more by the older people.

National income accounting is the subject of a considerable chapter in Michal's book, and the figures for a country come out considerably different depending on whether Western methods or Marxist methods are used, some items being larger by the one method, some by the other. Just one example of a viewpoint and hence method that appears to us strange: In Czechoslovak national income accounting there is an attempt to exclude services, except where these services eventuate in a material product; hence passenger transportation is excluded in figuring the aggregates, but freight transportation is included.

The longer chapters of Michal's book have helpful summaries. The index is finely enough divided that one can look up comparisons between some or all of the named countries on such things as automobiles in use, housing floor space, number of books published, newspaper circulation, and death rates from diabetes (considerably higher in the USA than in Czechoslovakia) and tuberculosis (much higher in Czechoslovakia than in the USA).

LYLE OWEN

University of Tulsa

Intermediate Income and Growth Theory. By Melvin L. Greenhut and Frank H. Jackson. New York: Prentice-Hall, 1961. Pp. xiii, 376. \$6.00.

A few years ago intermediate courses in economic theory were largely confined to value and distribution, with possibly a few late chapters de-

voted to aggregate income determination. In many institutions a course in macro-economic theory is now coordinate with the traditional course in price theory and there are now a number of intermediate textbooks devoted to macro-economics. Such a book is *Intermediate Income and Growth Theory* by Greenhut and Jackson.

Part I of the book describes the emergence and significance of the "new economics." Part II, the chief portion of the book, is devoted to static national income theory. The authors first concentrate on the simple Keynesian two-sector model. The notion of the consumption function is set forth, and then two chapters are devoted to investment, with emphasis on the marginal efficiency of capital and the rate of interest. The government and foreign sectors are introduced in a final chapter of Part II.

In Part III the theoretical model is used as a framework for the discussion of public policies that would be appropriate to combat depression. It is assumed that monetary policies have been treated in other courses, and emphasis is placed on fiscal policy, including debt management.

Part IV deals with national income accounting. The basic concepts and interrelationships developed for the theory section are refined and elaborated in accordance with the definitions and structure used by the U.S. Department of Commerce.

The final part is devoted to the dynamics of national income theory—first, the business cycle, and then economic growth. A special chapter treats the problem of general price inflation. The relationship of government to economic growth is considered briefly.

There are various meritorious features of the book, of which I shall mention a few. Beginning with the vividly written introductory part, the style generally remains good—although the explanation of the multiplier, and the description of the U.S. national income accounts, become tedious. Large print and frequent subheads also help to make the reading go quickly.

There is a lucid and helpful discussion of the various meanings of the terms "saving" and "investment" as they are used by Hawtrey, Robertson, Keynes, and the Stockholm school. The treatment of the marginal efficiency of capital is thorough; the explanation of the interest rate is along loanable funds lines, and the difference between this approach and Keynes' liquidity preference theory is set forth clearly. Of particular interest is the discussion of changes in the MEC, interest rate, and dividend yield over different phases of the business cycle. Brief discussions of the government and foreign sectors complete the picture.

The introduction to the business cycle is handled neatly, in view of space limitations. Three major

theories are summarized, and then the authors present their own composite theory. The discussion of economic growth, based largely on the theories of Harrod, Domar, Hicks, and Fellner, is an adequate introduction.

A major defect of the book to this reviewer is that, although the major variables necessary to explaining the level of aggregate income are discussed, they are not integrated in terms of a unified, general theory. This is done consciously, for the authors explain (p. 118):

This interaction of factors prevents our theoretically depicting independent elements which would permit easy prediction. Conversely, the theory as presented clearly embodies and illustrates the interdependencies of the forces behind the economic process as they do in fact exist. What is lost in sharpness is made up in significance, relevance, and meaningfulness.

The choice of such an approach was literally motivated by the belief that theories which achieve independence among these factors which determine investment do so at too great a cost as is illustrated by the Keynesian approach to the same problem, in which the MEC is excluded as a determinant of the rate of interest.

However, the Hicks-Hansen graphic approach using the LM and IS curves (see Alvin Hansen, *A Guide to Keynes*) does correct Keynes in including the MEC as a determinant of the interest rate as well as of the national income through the volume of investment. Even though subsequent qualifications and elaborations are required, the presentation of an integrated theory would have been more intellectually satisfying to teacher and student.

Some lesser criticisms of sections of the book: The analysis of a specific recession, 1957-58, is a good idea as part of the business cycle section, but the analysis here is not very pointed (Chapter 9). The discussion of secular inflation (Chapter 15), while having some strong spots, is generally inconclusive. Better use could have been made of the studies and hearings of the Joint Economic Committee. The concluding chapter, 16, "From Statics to Dynamics: A Final Statement," adds little to the earlier material.

On specific points: The volatility of the MEC seems exaggerated in the post-World War II context (pp. 119, 267). There will also be controversy over the assertion that the major cause of secular unemployment is the continuous introduction of labor saving innovations (p. 310), or that this may be corrected "by reductions in real wages so that more capital can be accumulated" (p. 315). A major exception to the statement, "Almost anything which advances the 'state of the arts' will, *ceteris paribus*, raise the MEC" is provided by capital-saving innovation.

Finally, it seems far-fetched to suppose (p. 304) "Because of poor accounting or production controls, firms do not see quickly enough that physical productivity has changed or that other costs have changed; they may find orders to be greater than output and mistakenly construe this as an increase in demand." Surely, management would look at incoming orders as such, rather than at orders in relation to shipments, to judge demand.

As a former Department of Commerce economist, I should, in conclusion, like to take exception to the view that the conduct of empirical research in national income analysis has been "carried on to a considerable extent independently of the work of these theoreticians" (p. 200). On the contrary, the Department's national income estimation work has been influenced by theory since the beginning. Guided initially by Simon Kuznets, later development of the accounts was heavily influenced by the Keynesian economics. Since 1936 the Department has been represented in the Conference on Research in Income and Wealth, whose purpose has been to stimulate development of national income theory and measurement. The 1956 meetings, reported in *Studies in Income and Wealth*, Volume 22, are a magnificent example of the continuing interchange between government and academic national income theorists and statisticians. The fact of "some differences between theoretical and statistical constructions" has been due chiefly to differences among theorists, rather than to lack of contact with theory on the part of Commerce Department economists. There is, however, inevitably some lag of statistical practice behind the development of a theoretical consensus on some issues, and on others the government economist must blaze new trails without guidance from the theoretician.

Despite these critical comments, I believe that the Greenhut-Jackson volume is in many ways an attractive textbook, worthy of consideration by teachers of intermediate theory.

JOHN W. KENDRICK

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Labor Commitment and Social Change in Developing Areas. By Wilbert E. Moore and Arnold S. Feldman. New York: Social Science Research Council, 1960. Pp. xv, 378. \$3.75.

This symposium, growing out of a conference sponsored in 1958 by the Committee on Economic Growth of the Social Science Research Council, focusses attention on and provides background for understanding a phenomenon that will hold a compelling position on the world stage for many years to come.

The title underemphasizes not only the importance but the scope of the study. Discussion

centers about the manner and degree of acceptance evidenced by pre-industrial work forces toward newly emerging industrial systems, true enough; but as Clark Kerr points out in Chapter 19, "industrialism is a great magnet which is drawing all human life to it and ordering the orientation of this life. Whether a society has been matrilineal or patrilineal, whether based on family or tribal ownership of land, whether responding to the Protestant ethic or the Bantu ethic, or whether it goes through a prior commercial revolution or not, it ends up following the logic of industrialism." I think most of us are aware by now that the means by which and the manner in which commitment to the new logic is effected will play a significant role in determining the course of world history within the foreseeable future.

Moore and Feldman devote the first four chapters (Part I) to developing a theoretical frame of reference for use by other contributors. Though their construct is repudiated as often as it is accepted in the balance of the papers, its refutation as well as its confirmation has the effect of lending a sense of dynamic unity to the total study.

In Part II of the volume, Udy, Belshaw and Hammond discuss the "Organization of Work" in various societies in pre-industrial or transitional stages; and Berkowitz adds a chapter summarizing and further extending their treatment. Gregory, Morris and Holton deal with "The Market Matrix" in Part III, with a summary and further development by Hoeselitz. "Competing Market Systems" are treated by Elkan and Fallers, Singer, and Tumin in Part IV; and Knowles, Nash and Apter discuss "Changing Social Structures" in Part V, with a summary and additional contributions by Kerr. Part VI is a "Postscript" added by Moore and Feldman which summarizes the total study and considers the relative merits of the two frames of reference that have emerged as methodological tools—the one provided in Part I, and that favored by the dissenters.

That these differing approaches should have made their appearance was inevitable if we assume that the various papers provide anything like a representative cross-section of social science methodology. Moore and Feldman favor an essentially taxonomic approach, emphasizing the importance of form and structure, the necessity for analysis in terms of a system of categories, and the involvement of the individual with existing roles, norms and values. The other approach, stated explicitly by Herkovits in Chapter 8, employs what Moore and Feldman refer to as "cultural relativism" but which I prefer to think of as "socio-cultural dynamics." It emphasizes the importance of the *process* which results in the emergence of structure. To quote Herkovits, it is "the position that holds

a given form to be the end result of a historical process whose character as a universal is to be induced from its manifestations in unique historical sequences."

This divergence of approach is by no means confined to social scientists, nor is it of recent origin. It is one more specific example of the controversy over the relative importance of centering attention on "being" on the one hand, or "becoming" on the other, that has been with us at least since the days of Plato and Aristotle. In the physical sciences, the controversy was resolved during the Renaissance as the primary emphasis shifted to process—but with continuing concern for the importance of structure. Today we use both points of view in the physical sciences and mathematics, regarding them as complementary rather than in conflict. We shift from one to the other, depending on the problem or particular stage of the problem confronting us. Higher algebra or numerical analysis are used for the static situation, while calculus in one of its many forms is used for the dynamic. In physics, we understand molecular structure from the standpoint of "particle physics"; but we shift to the concept of "wave physics" with no sense of disloyalty when we approach problems involving some form of radiation.

Too frequently, however, social scientists seem unable to bring themselves to accept the two points of view as complementary. The proponents of each have a tendency to insist that social phenomena can be properly understood only from their own vantage point. Moore and Feldman recognize in Chapter 20 that the symposium presents "another case of the traditional battle between the adherents of structural uniformity and those of cultural variability." Defining the issue more sharply, they point out that "Arrayed on one side are those who hold that although the structure of an industrial society may not be randomly variable, a significant amount of variation is possible and quite efficient. . . . Arrayed on the opposing side are those who question the possibility of significant variations in the sequence and structure of industrialization. They argue, among other things, that the costs of variation are likely to exceed the costs of radical alterations in life styles."

The practical difference between these points of view is that those who stress structural uniformity believe that members of a pre-industrial society can commit themselves to an industrial system only at the cost of abandoning their pre-industrial life pattern. Those favoring cultural variability, on the other hand, believe that the opportunity for industrial employment can be utilized by members of a pre-industrial society in such a way that satisfactory commitment to industrial employment can be incorporated into their existing way of life

—modification of the existing "way" will of course result, but it will be regarded as reasonable and natural by those experiencing it.

The cases reported in the symposium tend to confirm the latter point of view. Effective commitment to an industrial society appears to have involved significant abandonment of the values and norms of the previous society, as in India and Puerto Rico, for example, only when those norms and values had already demonstrated their disutility to those accepting employment. On the other hand, various native tribes of Uganda incorporate industrial employment into their existing life patterns in such a way that the basic values of those patterns are reinforced rather than otherwise. The pattern of incorporation varies; but as Elkan and Fallers point out (Chapter 13), in every case it "is a function of the total social situation in which [the worker] finds himself and by which his personal aspirations are molded." And finally, where an attempt has been made to force the abandonment of a satisfactory way of life and require compliance with an arbitrarily defined industrial pattern, as in the case of the Mossi, the result is quite unsatisfactory.

It would appear on the basis of the studies reported that for whatever purpose we may wish the members of a pre-industrial labor force to commit themselves to industrial employment, we must achieve it by managing the transition in such a way that it will be viewed by prospective employees as enhancing the possibility that they will be better able to "live like human beings" in terms of their definition of what such a state entails, their past experience, and their present situation. This calls for a combination of the two points of view expressed in this volume. We must use an essentially taxonomic approach, with its emphasis on structure, if we are to have any adequate notion either of the existing dimensions of the pre-industrial society or of the general direction in which it must move if commitment is to be achieved. But managing the transition is likely to be effective only if the concepts of socio-cultural dynamics are employed; for now we are concerned with a process rather than a state. In their concluding "Post-script," Moore and Feldman propose a sensible working relationship between the two points of view as they suggest that "the method of comparative analysis can satisfy some of the analytic needs and aid search for the dynamic."

This volume is recommended not only for its quite comprehensive and very objective treatment of a topic that is too frequently distorted by the emotional miasma generated by international power politics; taken in its entirety, it represents a cogent argument for social scientists to cease

their bickering over methodology and recognize their interdependence.

GLENN GILMAN

Georgia Institute of Technology

Trends in The American Economy in the Nineteenth Century. By the Conference on Research in Income and Wealth. (Volume Twenty-Four in the National Bureau of Economic Research series "Studies in Income and Wealth.") Princeton, N. J.: Princeton University Press, 1960. Pp. xi, 780. \$15.00.

As Professor Parker notes most delightfully in his Introduction, this is a bulky volume. Put differently, it covers so much ground in such a variety of ways that perhaps a brief review might appropriately be limited to an indication of the different kinds of things different kinds of scholars might find therein.

First, and perhaps most important in this connection, this work is a deliberate and thoroughgoing cooperative endeavor between economic statisticians and economic historians. Thus the several papers here collected are a major attempt to assign quantitative magnitudes to the changes in a number of key economic variables which took place in this country during the period examined. This, indeed, is the reason assigned by Professor Parker for the book's "unusual bulk." In his words this is not only "a joint effort of two quite different groups of scholars," but it is also "one of the most extended incursions made to date by economic statisticians into the preserve of the economic historian."

Not only, however, will statisticians and historians be interested in this work. It is in addition a study in national income analysis—an emphasis, incidentally, eminently appropriate to the work of a Conference on Income and Wealth.

A glance at its major outline will illustrate. Part I is entitled *Output Growth and Prices Trends*; in Part II attention shifts to *Income Originating, by Sector*; Part III turns to *Factor Payments*; the subject matter in Part IV is *Investment*; and Part V turns the spotlight on *Balance of Payments*. Again to quote from the introduction:

The empty economic boxes thus provisionally filled are not those famous boxes labeled Decreasing Cost Industry, Constant Cost Industry, Increasing Cost Industry, which first set Clapham and Pigou at odds. They are essentially categories of aggregative economic theory.

Nor is this emphasis on aggregative statistics allowed to obscure the more far-reaching dimensions of the economic historians' task. Though this is not as such a philosophy book, it nevertheless has been put together in the philosophic spirit out of which the best work in our discipline has always emerged.

On the one hand, it is recognized that an economy to be understood must "ultimately be disaggregated into many industries, if not into the individual decision-making units, within which the effects of changing demand, technology, factor supplies, and organizational forms on the price structure can be intimately assessed. Only then can we begin to speak of a mechanism of growth or a 'transformation process' within the economy." On the other hand, it is noted that the data presented in this volume can really only pose "the major question which economic history alone can attempt to answer: By what socio-economic mechanism was this record of economic change produced?"

There are in this book numerous reflections of this spirit. Thus it freely recognises the limitations of the underlying data from which the estimates arrived at were derived, that the adjustments often required for the completion of a statistical series were frequently arbitrary, that it is after all a "state of darkness which our historical memory inhabits." More important, however, is the emphasis that putting data together in an arbitrary way may serve the extremely useful purpose of pinpointing where further research is most urgently needed.

For if several such systems of data and interpretation exist, only further research—directed not in line with one's "interests" into whatever reaches of whim they may lead but directed at crucial points in the structures—can bring a final decision. The past is unknowable, but a past can be reconstructed. Historians have always known this; and, the use of careful measurements and bold estimates of the size of the unknowns must ultimately feed and guide, rather than restrict historical imagination.

But perhaps the most decisive indication of the quality of scholarship going into this volume is the structure of the several papers. Initially there is first a presentation of the data as classified and assembled (by ten-year averages or at ten-year intervals as seemed appropriate) together with an explanation of how these were put together. This is then followed up with one or more appendices in which a fuller statistical detail is made available, a more elaborate explanation of the statistical techniques employed is presented, and a comparative analysis of these findings side by side with earlier research on the same topic is made. And finally, much more often than not the presentation by the primary scholar is then subjected to the candid criticism of another student of the same subject.

All in all, this is an impressive work, and many economic history scholars will certainly pay it tribute in the years to come by using it as one springboard for their own endeavors. But they can pay it tribute only as they use it as a springboard.

Because to whatever extent those who come after consider this volume as the end of wisdom rather than its beginning, those who joined in its laborious construction will surely consider that they have failed to do what they set out to do.

HOWARD R. SMITH

University of Georgia

The Research Revolution. By Leonard S. Silk.
New York: McGraw-Hill Book Company,
1960. Pp. x, 244. \$4.95.

Leonard Silk's book is aimed at a lay audience of intelligent businessmen and citizens, and not at the audience of professional economists. The focus of the book is on the role of scientific research in the process of economic growth. The empirical bases on which Silk builds are: first, the work of Abramowitz, Schmookler, Solow, Massell, and others which show that increasing capital labor ratios account for only about one-tenth of our per worker productivity gain since 1900; second, the data on Research and Development collected by the National Science Foundation and McGraw-Hill which show an extremely high rate of growth of research spending in the post-World War II era; and third, the history of the semi-conductor industry, an industry which was born in the research laboratory.

The empirical material is well and interestingly presented. Silk's exposition of some of modern economic theory should offend none but the die-hard purist. I feel the book is an admirable popularization. The book should be of considerable interest to professional economists both as an interesting assignment to undergraduates, and as a good brush-up for those professionals who have not had a chance to keep up with the growing literature in this field. The appendix contains the very useful McGraw-Hill series on postwar Research and Development spending, and the McGraw-Hill forecasts for R and D during the sixties. (This material also is contained in the May 1960 AEA *Papers and Proceedings*.)

Silk argues that the post-World War II era is almost qualitatively different than the prewar era, in terms of its prime source of dynamism. Whereas the progressive prewar periods were usually the result of rapid technical advance in one or a few industries, and thus could be characterized as the "rail and steel era," or the "automotive, chemical, and electrical era," Silk feels that progress since World War II is more widespread and is, in a sense, the result of a *Research Revolution*. Silk believes that recent technical change is much more the result of the harnessing of quite sophisticated science than was prior technical change, and that the key postwar feature is the industrial research laboratory.

This is probably correct. I agree with Silk that

formal science is now playing a much more important role in the process of technical change than it did in the past. But despite the "Research Revolution," as evidenced by the extremely high rate of growth of R and D spending, there is very little statistical evidence that the rate of technical progress is any higher now than it was in the prewar era. Certainly the aggregate productivities figures provide no such evidence. This should be somewhat of a puzzle to anyone who argues that we have found a "new way to grow."

And Silk's use of the history of the semiconductor industry as evidence of the "new way to grow" surely is biasing the issue a bit, for Silk has picked about the single best example for his argument. The history of semi-conductors during the fifties is about as typical as the history of automobiles during the twenties. Semi-conductors are the epitome, surely not the norm.

In a way, these comments are unfair to Silk, for he never comes right out and says technical change is much faster now than it was in the past, or that the case of semi-conductors is typical. But the reader is likely to come away with these impressions. Nor is this to argue that R and D is not of major importance. Rather it is to argue that we still know very little about how important it is.

RICHARD R. NELSON

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Energy in the American Economy, 1860-1975. By Sam H. Schurr and Bruce C. Netschert. Baltimore: Johns Hopkins Press, 1960. Pp. xxii, 774. \$12.50.

This study was prepared by the Resources for the Future and financed primarily by the Ford Foundation. It is a most important book for anyone interested in energy economics in general and in the United States energy situation in particular. Because of the considerable difficulties the energy industries face, which has led to a clamor for a national fuels study by Congress, this volume is particularly timely. The data and analysis in this book under review should be of great value in the intelligent survey of the nation's fuel problems.

The purpose of the book is to compare at some future date (1975) the nation's energy requirements with supply availabilities. The book consists of three parts: history of energy consumption in the United States from 1850 to 1955; forecast of energy requirements up to 1975; an estimate of the availability of energy supplies by 1975. The discussion in each part is in terms of totals as well as individual energy sources, i.e., coal, oil, natural gas, hydropower, and fuelwood (in the historical section only), along with a part on nuclear power.

Part I is of particular interest to those concerned with economic development. The very rapid increase in the use of energy in the United States has

been a most important economic factor in creating our high productivity and the increasing standard of living. In quantitative terms, the authors note that when the relationship between GNP and energy consumption is examined, over the long term energy consumption increased less rapidly than did real GNP (pp. 157-164). (This is true only since about 1915; between 1880 and 1915 real GNP increased faster than did energy consumption.) In fact, my rough calculations of income elasticity for energy would indicate that for each 1.0% increase in real GNP, energy consumption rose only 0.7% in the last few years. The authors estimate that during 1955-1975 a further 15% of total decline is indicated in energy consumption per unit of real GNP. This decline, past and projected, is partly due to increased fuel efficiency caused by growing electricity consumption, substitution of diesel oil for coal, and increasing use of fuel oil and natural gas in home heating. It is, however, even more importantly due to the shift in the composition of GNP. The service section in the GNP is increasing its share of the total and this sector uses less energy than do the agricultural, manufacturing, and transportation sectors (pp. 165-168).

As far as the composition of energy consumption is concerned, technological changes resulted in a number of substitution processes in the last 100 years. First coal replaced fuelwood, later oil was substituted for coal, and presently natural gas is invading the markets of both. In 1900 coal supplied 70% of all energy, fuelwood 20% and the other fuels, the rest. About 15 years ago coal still supplied about 50% of energy, oil about 33%, natural gas 10% and hydroelectricity the balance. (By 1960 coal's share was 23%, oil's 45%, natural gas 28%, and that of hydroelectricity, 4%.)

In terms of forecast, the authors conclude that between 1955 and 1975 energy consumption will increase at an average annual rate of 3.2%. For estimating purposes it was assumed that real GNP will increase at 4.0% per annum. Regarding the latter, the authors comment that it is "meant to be at the high end of reasonable possibilities" (in order to test whether future energy supplies can be met from indigenous sources). This reviewer feels that the consideration of another alternative, i.e., lower rate, would have been helpful as it would have shed light also on the worsening surplus problem of the U.S. energy industries. As far as the pattern of energy demand is concerned, the authors estimate that by 1975 oil will supply 45%, natural gas 27%, coal 25%, and hydroelectricity 3%. This is very close to the 1960 pattern and implied in the distribution is the fact that while in the past the pattern of demand was in constant change, it will freeze along the 1955-1960 lines for the next 15 years. It should be noted that the share of coal, which is estimated in this book to be 25% in 1975

(and was 29% in 1955) was already only 23% in 1960. Incidentally, even by 1975 the contribution of nuclear energy is judged to be small; about 25 or 3.75% of total consumption. It is comforting to find that the energy forecasts were prepared essentially by "end-use" analysis of imposing details, and that the estimates of the consuming sectors were aggregated in the framework of 1975 estimated macroeconomic variables. (The reviewer appreciates the difficulties involved in preparing these estimates.)

How will these energy needs be met? The surprising conclusion is presented early in the book (p. 4): "...the United States in 1975 could satisfy its demands for all energy, and for each of the energy materials of which the total is composed, from domestic sources of supply, at no significant (real) increases in costs..." (Italics mine.) The authors state that this is neither a prediction that this will be done, nor a policy recommendation, but rather a statement of natural resources and technological possibility. The assumption is that recoverable oil and gas reserves are higher than they are estimated at present by others. The errors in this assumption are inherently large. It assumes that as yet unbound reserves will be proven and/or as yet undeveloped technologies will be discovered which will increase economic recovery and all this at essentially constant cost. This may well be so, but past experience indicates that incremental recovery and proving of new reserves are expensive in terms of investment funds needed for technological improvement. It is a well known fact that oil, our largest single energy source, is becoming increasingly costly to find in the United States, and that domestic oil, because of government protection, is about 50% more expensive than is imported oil. In fact, by liberalizing imports, U. S. energy cost could be reduced in the long run. This reviewer feels that it is essential that these reductions be made for reasons of economic growth and our trade position. Thus the more important issue is this: given the potential surplus of energy both here and abroad, what is the impact of this on the domestic energy industries? It would be unfortunate if the authors' statement of a natural resource possibility would be taken as a recommendation for a protectionist policy. In these discussions the authors make a contribution, however, by shifting away from the rather illusory concept of "proven reserve" to the more meaningful concept of a resource base.

From a technical point of view, this book is essential reading for those concerned with energy economics. In addition, the statistical appendix to the energy forecasts (pp. 553-744) is of great value, and to this reviewer's knowledge, unmatched.

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College of the City of New York

Economics of Watershed Planning. Edited by G. S. Tolley and F. E. Riggs. Ames, Iowa: Iowa State University Press, 1961. Pp. 339. \$3.95.

A New Frontier in Watershed Planning for multiple-use, the editors emphasize, is developing in the East. By treating a watershed as a socio-economic unit, planning for wise changes in land-use becomes more effective. Wise changes in land-use are needed throughout the East, it is believed, in order properly to conserve the nation's resources—forest and grazing lands as well as agricultural, municipal and industrial water, wildlife, recreational facilities, power. Similarly, urban property as well as agricultural property must be protected from flood damages.

Watershed planning thus is a public rather than a private responsibility. In fact, the underlying philosophy is that watershed planning should be multiple-purpose, that wise changes in land-use will more or less pay for the costs involved, and that the use of public funds for developing watershed programs is axiomatically justified.

Able technical persons from the Tennessee Valley Authority and the U. S. Department of Agriculture joined with persons from a number of universities for a Symposium on the Economics of Watershed Planning in June 1959, and the proceedings are presented in this volume. Sponsorship of the symposium was by the Southeast Land Tenure Research Committee, which in turn is sponsored by the Ford Foundation. Since about half of the papers are by federal government employees, and most of the remainder are by state government employees, conclusions would be expected to reflect a humanitarian attitude towards conservation—multiple use of resources for the greatest number of persons—and this is true. The general philosophy is that an economy of scarcity with respect to water resources is unsound.

Quantitative analytical techniques for evaluating alternative uses of water and land are presented. Dr. E. O. Heady of Iowa State University in a paper on "Models for Quantitative Application in Watershed Planning" suggests a procedure for deciding on the optimum development of a particular watershed, with consideration given to costs and alternative uses. Such analyses are a definite forward step in placing resource planning on a scientific basis. Emotional approaches which have been characteristic of many conservation undertakings in past years may be replaced by less biased analyses.

WILLIAM T. HICKS

University of Mississippi

NOTES

TENTATIVE PROGRAM OF THE THIRTY-FIRST CONFERENCE OF THE SOUTHERN ECONOMIC ASSOCIATION

Hotel Peabody, Memphis, Tennessee

November 10 and 11, 1961

THURSDAY, NOVEMBER 9, 1961

7:30 P.M.—Meeting of the Executive Committee

FRIDAY, NOVEMBER 10, 1961

Morning Sessions

9:00 A.M.—Seminar A: *Public Finance* (with S.F.A.)

Chairman: William D. Rosa, Louisiana State University

"Interstate Apportionment of Business Income," Charles E. Ratliff, Jr., Davidson College

"States' Rights and Fiscal Responsibilities: The Texas Case," Carey C. Thompson, University of Texas

"Principles of State and Local Debt Management," Joseph M. Bonin, Auburn University

Discussion: Don M. Soule, University of Kentucky; Howard L. Balsley, Louisiana Polytechnic Institute; James L. Green, University of Georgia

9:00 A.M.—Seminar B: *International Economic Integration*

Chairman: Hans W. Gerhard, Duke University

"The European Experience," Don D. Humphrey, Fletcher School of Law and Diplomacy

"Central American Experience," Robert S. Smith, Duke University

"Disintegration in British East Africa?—An Economic Appraisal," Owen P. F. Horwood, University of Natal, Durban, South Africa

Discussion: W. Donald Bowles, American University; Fawzi Habib, International Bank for Reconstruction and Development; Robert A. Degen, University of the South

9:00 A.M.—Seminar C: *Recent Developments in Business Administration*

Chairman: Raymond V. Lesikar, Louisiana State University

"What's Right with Business Education Today," Ike M. Harrison, Texas Christian University

"New Concepts and Developments in Organization," William E. Schlender, The Ohio State University

Discussion: D. Gray Miley, Mississippi College; Carl Cabe, University of Kentucky

9:30 A.M.—Seminar D: *New Developments for Marketing*

Chairman: Harry A. Lipson, Jr., University of Alabama

"Mathematics for Marketing," Frank Charvat, Emory University

Discussion: Ralph B. Thompson, University of Florida; James Hilton, University of South Carolina

"Nature of Salesmanship," George H. Zeiss, Southern Methodist University

Discussion: Carrol Ehlers, Georgia State University; Weyland Tanning, Memphis State University

10:30 A.M.—Seminar E: *Problems in Wage Theory*

Chairman: James A. Morris, University of South Carolina

"Some Concepts in Wage Theory," Sherrill Cleland, Kalamazoo College

"A Model of Industrial Wage Policy," Robert Rosen, University of South Carolina

"Research Needs in Minimum Wage Theory," John M. Peterson, University of Arkansas

Discussion: G. R. Hall, University of Virginia; John P. Owen, University of Houston; E. H. Flynn, University of Tennessee

10:30 A.M.—Seminar F: *Recent Developments in the Theory of Velocity*

Chairman: B. U. Ratchford, Federal Reserve Bank of Richmond

"Velocity and the Short Run Rate of Interest," Lawrence S. Ritter, New York University

"Velocity and the Long Run Rate of Interest," Henry A. Latané, University of North Carolina

"Critique of Velocity Theory in Light of Recent Developments," Leland B. Yeager, University of Virginia

Discussion: William J. Frazer, Jr., University of Florida; Richard H. Timberlake, Jr., Florida State University; William P. Yohe, Duke University

10:30 A.M.—Seminar G: *Current Trends in Management Thinking*

Chairman: Bernard Bienvenu, Southwestern Louisiana University

"The Wedding of the Behavioral Sciences and

the Teaching of Management," William M. Fox, University of Florida

"The Wedding of the Finite Sciences and Management," Herbert G. Hicks, Louisiana State University

Discussion: Arthur M. Whitehill, Jr., University of North Carolina; W. W. Thompson, Jr., Oklahoma State University

11:00 A.M.—Seminar H: *Economic Education*

Chairman: Allan M. Cartter, Duke University

"Designs for Regional and State Economic Studies," Edgar S. Dunn, Jr., University of Florida

Discussion: Ernst W. Swanson, North Carolina State College; Howard G. Schaller, Tulane University

Luncheon Meetings

12:30 P.M.—Marketing Luncheon

Chairman: Ralph B. Thompson, University of Florida

Address: By Albert W. Frey of Frey and Hummel, President of the American Marketing Association

12:30 P.M.—Management Luncheon

Chairman: Curtis E. Tate, Jr., University of Georgia

Afternoon Sessions

2:00 P.M.—Seminar A: *Perspectives on the Theory of the Firm*

Chairman: Rendigs Fels, Vanderbilt University

"Philosophic Preference and Theory of the Firm," Sherman Krupp, Lehigh University

"The Viable Firm and Society," John S. Henderson, University of Alabama

"Some Methodological Questions and the Theory of the Firm," Eugene Rotwein, University of Wisconsin

Discussion: Allen M. Sievers, University of Florida; Edgar O. Edwards, Rice University; Richard S. Bower, Vanderbilt University

2:00 P.M.—Seminar B: *Theory of Regional Economics*

Chairman: M. L. Greenhut, University of Richmond

"A California Intersectoral Flows Study," Charles M. Tiebout, University of California, Los Angeles; W. Lee Hansen, University of California, Los Angeles

"Area Developments and Industrial Decentralization," Vern Ruttan, Purdue University; L. T. Wallace, Purdue University

"Regional Accounts—A Contradiction," Werner Hochwald, Washington University

Discussion: Joseph Airov, Emory University; Stephen L. McDonald, University of Texas; Richard W. Poole, Oklahoma State University

2:00 P.M.—Seminar C: *Applied Banking* (with S.F.A.)

Chairman: Lewis E. Davids, University of Missouri

"Commercial Banks as Competitors," Clifton H. Kreps, Jr., University of North Carolina

"Commercial Banks as Savings Intermediaries," Charles F. Haywood, University of Mississippi

"Commercial Banks as Money Creators," Robert P. Black, Federal Reserve Bank of Richmond

Discussion: George W. McKinney, Jr., Assistant Vice-President Irving Trust Company, New York; Gilbert M. Mellin, Assistant Vice-President Whitney National Bank, New Orleans; Tilford C. Gaines, Vice-President First National Bank, Chicago

2:00 P.M.—Seminar D: *The Theory and Philosophy of Management*

Chairman: A. H. Keally, University of Tennessee

"Toward an Integration of the Theories of Management," Bernard Sord, University of Texas

"The Problem of Reconciliation in the Philosophy of Management," Ronald B. Shuman, University of Oklahoma

Discussion: Joseph L. Massie, University of Kentucky; E. H. Anderson, University of Alabama

2:30 P.M.—Seminar E: *Methods of Teaching Marketing*

Chairman: Donald F. Mulvihill, University of Alabama

Panel: Charles R. Spindler, Memphis State University; Harold Frey, University of Arkansas; Ben Graves, Louisiana State University; Stuart McFarland, Jacksonville University

3:30 P.M.—Seminar F: *Research Presentations in Marketing*

Chairman: Stuart McFarland, Jacksonville University

"An Interpretation of the Marketing Concept," Robert L. King, University of South Carolina

"Automation as it Relates to Budgeting in Retailing," Robert E. Bell, University of Arkansas

"Institutional Grocery Wholesaling," Paul Wischkaemper, Georgia Southern College

"Retail Sales Training," Richard Vreeland, Mississippi Southern College

3:30 P.M.—Seminar G: *Monopoly and Its Regulation*

Chairman: Clark Lee Allen, Southern Illinois University

"The Doctrine of Unfair Competition: Some Recent Refinements," Donald J. Dewey, Columbia University

"A Test of Monopsony," Robert L. Bunting, Cornell College

"The Technological Revolution and Problems of Regulation," J. M. Hund, Emory University
 Discussion: Ronald H. Wolf, University of Tennessee; Gaylord Cummins, Tulane University; Charles F. Phillips, Jr., Washington and Lee University

3:30 P.M.—Seminar H: *Applied Research in the Theory of the Firm*

Chairman: John B. McFerrin, University of Florida

"Applicability of the Theory of the Firm to Economic Development," Cleon Harrell, N. C. State College

Discussion: George Hunsberger, University of Arkansas; Jim Reese, University of Oklahoma
 "Operations Research and the Theory of the Firm," Almarin Phillips, University of Virginia
 Discussion: James W. Sweeney, Tulane University; P. B. Han, Georgia Institute of Technology

4:30 P.M.—Business Session of Southern Finance Association

Chairman: Arthur Weimer, President American Finance Association

6:00 P.M.—Dinner Meeting of Officers, Editors, and Correspondents

Evening Sessions

8:00 P.M.—President's Address

Chairman: Calvin B. Hoover, Duke University

"Labor Arbitration after Twenty-five Years," Frank T. de Vyver, Duke University

9:00 P.M.—Annual Business Meeting

9:30 P.M.—Meeting of the Executive Committee

SATURDAY, NOVEMBER 11, 1961

7:30 A.M.—University of Virginia Breakfast

7:30 A.M.—Duke University Breakfast

8:30 A.M.—Seminar A: *Aggregative Economics*

Chairman: Charles E. Ferguson, Duke University

"Some Problems in Econometric Forecasts," Lawrence R. Klein, University of Pennsylvania

"Some General Problems in Dynamic Model Construction," R. W. Pfouts, University of North Carolina

"Aggregative Dynamic Models," Hans Brems, University of Illinois

8:30 A.M.—Seminar B: *Economic Development*

Chairman: R. Murray Havens, University of Alabama

"Analysis of W. W. Rostow's Theory of Economic Development," Ernest Patterson, Davidson College

"Private vs. Public Sectors in the Theory of Development," Clarence H. Danhof, Tulane University

"Mexican Economic Development and Prospects for the Future," Eastin Nelson, University of Texas

Discussion: John A. Davis, Mississippi State University; J. D. Dunn, Alabama College; James M. Stepp, Clemson College

10:00 A.M.—Seminar C: *The Eckstein Report in Retrospect*

Moderator: Maurice W. Lee, University of North Carolina

Roundtable Discussion: Calvin B. Hoover, Duke University; Frits Machlup, Princeton University; Robert Solow, Council of Economic Advisors

10:00 A.M.—Seminar D: *Industrial Relations*

Chairman: Bernard M. Olsen, North Carolina State College

"The Effects of Unionization on Costs and Productivity," Allan Mandelstamm, Vanderbilt University

"Unions and Personnel Practices in the South," H. Ellsworth Steele, Auburn University

"Major Factors Affecting Labor Management Relations in the Telephone Industry," J. Earl Williams, University of Tennessee

Discussion: Irvin Sobel, Washington University; Irving J. Goffman, University of Florida; Allan J. Braff, West Virginia University

DEATHS

Dave Delorme, of the Economics Department, Oklahoma City University, died April 15, 1961.

Charles Gordon Siefkin, professor of economics and formerly dean of the School of Business Administration, Emory University, died October 31, 1960.

Wilson E. Williams, formerly professor of economics at Virginia State College, died April 25, 1960.

APPOINTMENTS, PROMOTIONS, RESIGNATIONS

Conley R. Addington has resigned as chairman of the Accounting Department, University of Miami, to return to full-time teaching with the rank of professor of accounting.

Louise Allen, of the University of North Carolina, joined the faculty of the Economics Department, North Carolina State College, this fall as an instructor.

Joel P. Authement has been appointed assistant professor of management at the University of Southwestern Louisiana.

Robert T. Averitt, who has been doing graduate work at the University of Texas, has been appointed assistant professor of economics at Smith College.

Ralph Everett Balyeat, formerly at the Uni-

versity of Wichita, has been appointed associate professor of management at the College of Business Administration, University of Georgia.

Thomas Bennett has been appointed associate professor of behavioral sciences in the Center for Behavioral Sciences at George Washington University.

Bernard J. Bienvenu, head, Department of Management at the University of Southwestern Louisiana, has been elected first vice-president of the Southwestern Management Association.

James R. Bobo, of Louisiana State University, has been appointed assistant professor of economics at Louisiana State University in New Orleans, beginning in September 1961.

Stanley E. Boyle has been promoted to associate professor of economics at St. Louis University.

R. W. Bradbury, professor of economics at the University of Florida, participated in the Economics-in-Action Program at Case Institute of Technology during the summer.

William L. Breit, of Michigan State University, has been appointed assistant professor of economics, Louisiana State University, beginning in September 1961.

Charles E. Brewer, acting chairman of the Department of the Economics at Queens College (N.C.), attended the 4-week seminar in Economics-in-Action at Case Institute last summer.

Luther Brock, assistant professor of business communications at the University of Southwestern Louisiana, has resigned to accept a position at North Texas State College.

Harrison M. Bryce, Auburn University, has resigned as assistant agricultural economist to enter private business.

James M. Buchanan, chairman of the James Wilson Department of Economics at the University of Virginia, is on leave during the academic year 1961-62 in order to serve as Fulbright lecturer at Cambridge University (England).

Edwin Caldwell has returned to his position as professor of economics at Baylor University after a year's leave on industrial development research with the Federal Reserve Bank of New York.

E. Everett Caradine, Jr., formerly at Louisiana State University, has been appointed assistant professor of economics at the University of Southwestern Louisiana.

Clara Cecil Cassidy retired from the faculty of Flat River Junior College at the close of the 1960-61 academic year.

Ira C. Castles has been promoted to professor of economics at Delta State College.

George Cate, instructor in business at Little Rock University, has resigned to do graduate work at American University.

Donald M. Chang has been appointed assistant

professor of industrial relations at American University.

E. D. Chastain, Jr., Auburn University, participated in the Regional Faculty Research Seminar in Economics at Duke University from June 19 through August 11, 1961.

Yu-Min Chou has been appointed assistant professor of economics at Baylor University.

John W. Clark, of Purdue University, has been appointed assistant professor of management and marketing, Louisiana State University, beginning in September 1961.

Daniel R. Cloutier, formerly at the University of Alabama, has been appointed associate professor in public administration at George Washington University.

Ann Poythress Cobb has accepted a position as instructor of economics for the 1961-62 academic year at Mississippi Southern College.

Billy D. Cook, of Bowling Green, Kentucky, became an agricultural economics assistant in September 1961 in the Department of Agricultural Economics, Clemson College.

Frank Coolsen has been appointed professor of marketing at American University.

Andrew J. Cooper, III, formerly of Princeton University, has been appointed assistant professor of economics at Georgia Institute of Technology.

A. E. Crotty, assistant professor of accounting at the University of Miami, has been granted a leave of absence to do graduate work at the University of Texas.

J. F. Curry has been made acting head of the Department of General Business at Mississippi State University.

Coldwell Daniel, III, chairman of the Department of Economics at Mississippi Southern College, is on leave during the 1961-62 academic year to teach in Pakistan on a Fulbright grant.

M. Gordon Daniels, formerly assistant professor of economics at Texas A. and M. College, has been appointed foreign service officer and has been assigned to the Embassy at Bogota, Colombia, as economic officer with the U. S. Department of State.

M. J. Danner, Auburn University, attended and participated in the annual Economics-in-Action Program of the Case Institute of Technology in Cleveland during June and July of 1961.

C. Howard Davis, formerly of Vanderbilt University, has been appointed assistant professor of economics at Mercer University.

James W. Deskins, who has been doing graduate work at the University of Oklahoma, has been appointed instructor in accounting at the University of Houston.

William P. Dillingham, professor of economics at Florida State University, has received a Ful-

bright award to lecture in Madrid and Barcelona, Spain, during the academic year 1961-62.

Edward K. Dix has resigned from Hampden Sydney College in order to resume graduate studies.

George A. T. Donely has resigned his position as instructor in finance at Louisiana State University in New Orleans.

Louis A. Dow, formerly of the University of Oklahoma, joined the faculty of the Economics Department, North Carolina State College, last fall as associate professor.

Edward N. Dubois has been promoted to associate professor of economics at St. Louis University.

Frank Dunbaugh, associate professor of marketing, University of Miami, has been granted a leave of absence to do research in various Latin American countries.

Floyd Durham, formerly of the University of Oklahoma, has been appointed assistant professor of economics at Texas Christian University.

Harry H. Elwell, Jr., professor of marketing, Florida State University, served at the Air War College, Maxwell Air Force Base, Alabama, and as a consultant in management and marketing to Standard Oil Company of New Jersey during the summer of 1961.

R. B. Eutaler, who has been on leave of absence for the past two years with the University of California-Ford Foundation Project in Indonesia, has returned to the University of Florida in his position as professor of economics.

John Maxwell Ferguson left the University of Colorado and joined the Business Department of William Woods College to teach economics.

W. C. Flewelling, formerly professor of accounting at the University of Alabama, has been appointed dean of the School of Business and Industry at Mississippi State University.

Herbert Geyer, visiting lecturer at Southern Methodist University, has been appointed associate professor of economics at that university and spent the summer of 1961 at the University of Frankfurt am Main, Germany.

Kenneth M. Gibson has resigned his position at Louisiana State University in New Orleans to do graduate work at the University of Alabama.

Leon L. Gintsig, of the Veterans Administration, has been appointed associate professor of hospital administration at George Washington University.

Ben B. Graves has been appointed assistant professor of management and marketing, Louisiana State University, beginning in September 1961.

Ralph Gray, formerly of Syracuse University, has been appointed instructor in economics at Little Rock University.

Robert N. Gray has joined the Phillips Uni-

versity faculty as assistant professor in the Business Administration Division.

C. Jackson Grayson, Jr., associate professor of business administration at Tulane University, has been appointed associate dean of the School of Business Administration at Tulane, effective July 1, 1961.

Albert Griffin, professor of business administration at the School of Business Administration, Emory University, is on leave of absence for the year 1961-62, serving as vice president of the Exchange National Bank of Winter Haven, Florida.

Reynolds Griffith, instructor in business at Little Rock University, has resigned to do graduate work at the University of Texas.

Oliver F. Guinn, who has been doing graduate work at the University of Texas, has been appointed assistant professor of economics at Washburn University.

Joseph E. Hampton has been appointed professor of accounting and director of the accounting program at American University.

Laurence E. Harvey, assistant professor in the computer division of the School of Business at North Texas State University, has received a Ford Foundation grant for graduate study at Stanford University in 1961-62.

Harmon H. Haymes, formerly of Smith College, has been appointed assistant professor of economics at Washington and Lee University.

Emory J. Hebert has accepted a position as associate professor of management at the University of Southwestern Louisiana. He was formerly at Arizona State College.

James E. Hibdon, formerly of Texas A. and M. College, has been appointed associate professor of economics at the University of Oklahoma.

Benjamin Higgins, professor of economics at the University of Texas, spent the summer of 1961 in South America studying social aspects of economic development in Latin America for the Economic Commission for Latin America. He also served as a fiscal consultant to the government of Brazil.

Billy Joe Hodge has been promoted to associate professor of management at the University of Houston.

William H. Hoffman, Jr., formerly assistant professor of accounting at the University of Texas, has been appointed to the faculty of Louisiana State University.

W. Slater Hollis, an economist at The Citadel, has resigned.

J. T. Hood, of Louisiana State University, has been appointed assistant professor of accounting, University of Texas, beginning in September 1961.

George R. Horton, Jr., formerly of the University of Virginia, has been appointed assistant

professor of economics in the University of Georgia.

David S. Huang has been appointed assistant professor of economics at the University of Texas.

Charles McC. Hummel, formerly of Davidson College, has been appointed associate professor of economics at Sweet Briar College.

R. F. D. Hutchings, a Soviet specialist with the British Foreign Office, joined the Department of Economics of the University of Maryland as a lecturer during the 1961-62 academic year.

James C. Ingram has been promoted to professor of economics in the School of Business Administration, University of North Carolina. He has also been appointed managing editor of the *Southern Economic Journal*, effective September 1961.

Boris Ischboldin al Bakri was promoted to professor of economics at St. Louis University in September 1960.

Elmo L. Jackson, professor of economics, University of Florida, served as visiting professor at Louisiana State University during the summer of 1961.

Donald R. Johnson, University of Miami, has been promoted to professor of finance.

Kenneth S. Jones, formerly instructor in economics, Mercer University, has been named a graduate assistant at the University of Texas to continue graduate work.

Paul E. Junk is on leave of absence from the University of Missouri, September 1961 to August 1962, to do research with Community Studies in Kansas City.

R. H. Kalkman has resigned his instructorship in the Department of Real Estate, University of Florida.

Patrick S. Kemp has been promoted to associate professor of business administration at the School of Business Administration, Emory University.

Edward E. Kern, Jr., Auburn University, attended and participated in the 1961 annual session of the School of Banking of the South at Louisiana State University during June 1961.

Charles E. Klasson, formerly of Arizona State University, was appointed assistant professor of management at the University of Texas, effective September 1, 1961.

P. E. Koefod, associate professor of economics, University of Florida, served as visiting professor at Duke University during the summer of 1961.

A. J. Kondonassis has been appointed chairman of the Economics Department, School of Business Administration, University of Oklahoma.

Sid Kouri, of the Economics Department, Oklahoma City University, has returned from his doctoral studies at the University of Arizona.

Lawrence Kratz has been promoted to associate professor at Mississippi State University.

John M. Kuhlman, formerly of the University of Cincinnati, became associate professor of economics at the University of Missouri in September 1961.

Harold Q. Langenderfer has been promoted to professor of accounting in the School of Business Administration, University of North Carolina.

David T. Lapkin has been promoted to professor of economics in the School of Business Administration, University of North Carolina.

Arthur D. Larson, formerly of Bucknell University, has been appointed assistant professor in public administration at George Washington University.

Thomas W. Leland has retired as head of the Division of Business Administration at Texas A. and M. College, after 39 years of service.

Glen C. Lindsey has been promoted to assistant professor of business administration at Davidson College.

Robert James Long, formerly of the University of Arkansas, is serving as instructor in economics and doing further graduate work at the University of Mississippi.

William A. Luker, formerly instructor in business administration at North Texas State University, has been appointed associate registrar at that university.

R. Pierce Lumpkin, formerly economic consultant to the Bank of Virginia and to the investment firm of Edward G. Webb and Company, has been appointed associate professor of economics at the Richmond Professional Institute (Va.).

Stephen L. McDonald, formerly chairman of the Department of Economics at Louisiana State University, has been appointed professor of economics at the University of Texas, effective September 1961.

Joseph P. McKenna has resigned as director, Department of Economics, St. Louis University, and has accepted an appointment as professor of economics at Boston College with an initial two-year leave of absence. In the interim he is serving as visiting professor at the Bologna (Italy) Center, School of Advanced International Studies of The Johns Hopkins University.

Bruce D. McSparrin, Jr., formerly associate professor of business management, University of Oklahoma, went to Arizona State University, September 1, 1961.

Lawrence F. Mansfield has resigned from Hollins College in order to accept a position in the Federal Reserve Bank of Atlanta.

A. James Meigs has left his position as assistant vice-president in the Research Department of the Federal Reserve Bank of St. Louis to become economic advisor to the president, The New York Stock Exchange.

Charles E. Meyerding has left his position as

instructor of economics at Washington University and is at the University of Minnesota during the 1961-62 academic year.

Arthur C. Meyers, Jr. was promoted to professor of economics at St. Louis University in September 1960.

Jan M. Michal has been appointed associate professor of economics at Western Maryland College.

James F. Miles, associate agricultural economist, Clemson College, has recently returned from El Salvador where he was a Point IV Agricultural Marketing Consultant to the Ministry of Agriculture for two months.

H. H. Mitchell, formerly head of the Department of Business Administration of Virginia Polytechnic Institute, assumed the position of dean of the newly organized School of Business Administration of Virginia Polytechnic Institute, effective September 1, 1961.

A. M. Moore, of Louisiana State University, has been appointed assistant professor of economics, Rutgers University, beginning in September 1961.

Daniel C. Morgan, Jr. has been appointed assistant professor of economics at the University of Texas.

William M. Morgenroth, formerly of Pittsburgh University, joined the Business Management staff at the University of Oklahoma as assistant professor, September 1, 1961.

James A. Morris, professor of economics at the University of South Carolina, has been elected a member of the board of editors of the *Southern Economic Journal*.

Alexander H. Morrison has been promoted to professor of economics at the Virginia Military Institute.

John C. Murdock, who was on leave of absence last year to do research with Community Studies in Kansas City, has returned to the department of economics at the University of Missouri.

J. Carter Murphy, associate professor of economics at Washington University, is serving in a Fulbright appointment at the Bologna (Italy) Center, School of Advanced International Studies of The Johns Hopkins University for the year 1961-62. He was visiting professor at Southern Methodist University during the spring semester of 1961.

James T. Murphy, formerly of the State University of Iowa, has been appointed assistant professor of finance at Tulane University.

Clark E. Myers, formerly at the Harvard Graduate School of Business Administration, was appointed dean, School of Business Administration, University of Miami, effective September 1961.

Henry Nash is on leave from Mississippi State

University to do graduate work at the University of Alabama.

Ronald North has been appointed assistant agricultural economist at Clemson College where he will work toward the Ph.D. degree.

James Roy Ott, Jr., formerly with Harding College, has been appointed assistant professor of economics at the College of Business Administration, University of Georgia.

Francis X. Owens has been appointed associate professor of business administration at American University.

Philip C. Packard has been appointed assistant professor of economics at the University of Maryland. During the 1960-61 academic year he taught in Europe in the Maryland overseas program.

Harry R. Page, recently with the U. S. Air Force, has been appointed assistant professor of business administration at George Washington University.

Neil R. Paine, who has been doing graduate work at the University of Texas, has been appointed assistant professor of general business at the University of Houston.

Samuel F. Parigi, who has been doing graduate work at the University of Texas, has been appointed assistant professor of economics at Lamar State College of Technology (Texas).

William N. Parker has been promoted to professor of economics in the School of Business Administration, University of North Carolina.

Charles A. Partin, who has been doing graduate work at the University of Texas, has been appointed assistant professor of economics at New Mexico State College.

J. W. Pattillo has been appointed instructor in accounting at Louisiana State University, beginning in September 1961.

Robert F. Pethia, formerly of Ohio State University, joined the faculty of Duke University as instructor in the Department of Economics and Business Administration in the fall of 1961.

I. James Piki, Jr., formerly assistant professor at Southern Methodist University, has been appointed associate professor of economics at the College of Business Administration, University of Georgia.

B. Robert Rafferty, who has been doing graduate work at the University of Texas, has been appointed assistant professor of economics at the University of Kansas City.

John M. Richards, formerly of Louisiana State University, has been appointed assistant professor of economics at McNeese State College, beginning in September 1961.

David Robinson has been promoted to associate professor of general business at the University of Houston.

H. M. Rollins, Jr., assistant professor in the School of Commerce at Southern University, was recently awarded a 1961 General Fellowship in Life Insurance by the American Association of University Teachers of Insurance.

Frank A. Ross, formerly at Northeast State College, has been appointed associate professor of accounting at Louisiana State University in New Orleans.

Milton Russell, formerly of Iowa State University, has been appointed assistant professor of economics at Texas Christian University.

Anthony L. Sancetta has been promoted to professor of economics at the College of William and Mary.

W. M. Schenkel, formerly with the Bureau of Indian Affairs, has been appointed assistant professor of real estate, University of Florida.

Lawrence L. Schkade, formerly of the University of Southwestern Louisiana, has been appointed assistant professor of finance at Louisiana State University, beginning in September 1961.

Leonard G. Schramm, formerly with the Schramm Wholesale Grocery Company, has joined the faculty of Flat River Junior College to teach economics.

L. M. Schur, associate professor of economics, Louisiana State University, is on sabbatical leave of absence for the first semester of 1961-62.

G. T. Schwenning, formerly professor of business administration at the University of North Carolina, has been appointed visiting lecturer in the School of Business, Florida State University, for the academic year 1961-62.

Scott E. Seager, who has been doing graduate work at Indiana University, has been appointed assistant professor of finance at North Texas State University.

William O. Shropshire has been appointed assistant professor of business administration at the School of Business Administration, Emory University.

C. B. Shulenberger, who joined the Economics Department of North Carolina State College in 1927, retired in June 1961.

A. M. Sievers, professor of economics, University of Florida, served as visiting lecturer at City College of New York during the summer of 1961.

George B. Simmons, formerly assistant professor of marketing at Indiana University, has been appointed assistant professor of marketing at the University of Texas.

Alex J. Simon, formerly at the University of Oklahoma, has been appointed associate professor of management at the University of Southwestern Louisiana.

B. F. Sliger, associate professor of economics, Louisiana State University, is on sabbatical leave of absence for the second semester of 1961-62.

Frederic F. Smith has accepted an appointment as instructor in finance at Louisiana State University in New Orleans.

Howard R. Smith, professor of economics at the University of Georgia, has been granted a leave of absence from September 1961 to August 1963 to serve in an executive training program with the United Arab Republic. He will be located in Cairo, Egypt.

Tipton R. Snavely has retired as professor of economics in the James Wilson Department of Economics of the University of Virginia.

Philip B. Stockton returned to The Citadel in September from the University of Virginia where he did graduate work.

Donald M. Street, Auburn University, has resigned as instructor in economics and business administration to enter the Graduate School at Pennsylvania State University.

Herman A. Stribling, Jr., formerly instructor in economics at the University of Alabama, has been appointed assistant professor in the Department of Business Administration, Alabama College.

Shanti S. Tangri, formerly assistant professor of economics at San Francisco State College, has been appointed assistant professor of economics at Southern Methodist University.

Lloyd H. Taylor, Jr., formerly assistant professor of business administration at Texas A. and M. College, has been appointed assistant professor of business administration at Lamar State College of Technology (Texas).

R. J. Thacker, of Louisiana State University, has been appointed assistant professor of accounting, University of Southern California, beginning in June 1961.

Brinton P. Thompson has been promoted to assistant professor of economics at the Virginia Military Institute.

Gorden Thompson has been appointed instructor in business administration at Georgetown University.

Joseph W. Thompson, Jr. resigned from Mississippi State University to become Mayor of Starksville, Mississippi.

John J. Treacy, who has been doing graduate work at Tulane University, has been appointed assistant professor of economics at Texas A. and M. College.

Donald E. Vaughn, of the University of Texas, has been appointed assistant professor of finance, Louisiana State University, beginning in June 1961.

William D. Wagoner, who has been doing graduate work at the University of Texas, has been

appointed assistant professor of economics at the University of Wyoming.

C. Richard Waita, who has been doing graduate work at the University of Texas, has been appointed assistant professor of economics at Northwestern State College, Louisiana.

James Muir Waller has been promoted to associate professor of economics at the College of Business Administration, University of Georgia.

W. A. Walter, Rear Admiral (retired), U. S. Navy, became adjunct professor of economics at North Carolina State College in September 1961.

Charles G. Walters, of the University of Illinois, has been appointed assistant professor of management and marketing, Louisiana State University, beginning in September 1961.

Frank Watson has been promoted to professor at Mississippi State University.

Irwin Weinstock, of the University of Southwestern Louisiana, has been appointed instructor of management and marketing, Louisiana State University, beginning in September 1961.

Burton A. Weisbrod of Washington University has been appointed Missouri correspondent for the *Southern Economic Journal*.

J. D. Wells, assistant professor of economics and statistics, University of Florida, served as visiting professor, University of California, Los Angeles, during the summer of 1961.

R. A. White has been promoted to professor at Mississippi State University.

Edmund Whittaker, formerly professor of economics at Colorado State University, has been appointed professor of economics at Hampden-Sydney College.

Francis M. Wilhoit, assistant professor of government, University of Miami, has resigned.

Billy H. Wilkins, who has been doing graduate work at the University of Texas, has been appointed assistant professor of economics at Oregon State College.

John Williams, formerly research assistant, Department of Agricultural Economics, Clemson College, has joined the research staff at Mississippi University to do graduate work.

Jack C. Wimberly has been appointed instructor in economics, Louisiana State University, beginning in September 1961.

Othmar Winkler, formerly of Marquette University, has been appointed assistant professor of business administration at Georgetown University.

Reinhold P. Wolff, professor of economics and director of the Bureau of Business and Economic Research, University of Miami, has been granted a leave of absence during the academic year 1961-62.

John L. Wortham, professor of economics, has been appointed chairman of the Department of Economics at Texas Christian University.

William D. Wubben, visiting associate professor of economics at Davidson College, 1960-61, has been appointed associate professor of economics and business administration.

Bobby R. York, formerly instructor in accounting at Texas A. and M. College, has been appointed instructor in accounting at the University of Houston.

John Yurkow has been promoted to associate professor at Delta State College.

Stephen A. Zeff, formerly of the University of Michigan, has been appointed assistant professor of accounting at Tulane University.

NEW MEMBERS

The following names have been added to the membership of the Southern Economic Association:

Carl W. Allen, Dundas Heights, Blacksburg, Va.

David S. Ball, University of North Carolina, Chapel Hill, N. C.

Benjamin Hume Bardin, Atlantic Christian College, Wilson, N. C.

J. L. Brown, Prairie View A & M College, Prairie View, Tex.

Horace B. Davis, Shaw University, Raleigh, N. C.

Stephen Nai-Kai Hu, University of North Carolina, Chapel Hill, N. C.

G. L. Hyde, University of North Carolina, Chapel Hill, N. C.

Rudy Lamone, 210 Henderson Street, Chapel Hill, N. C.

Edward R. Lehman, 10 Maple Avenue, Pelham, N. Y.

A. Joseph Lerro, University of Alabama, University, Ala.

Philip B. McGill, Box 906, Chapel Hill, N. C.

John R. Matthews, Jr., Box 6303, West End Branch, Richmond, Va.

Lillian Rudeseal, Mary Baldwin College, Staunton, Va.

Gerald K. Saunders, Missouri Valley College, Marshall, Mo.

Don Schilling, University of North Carolina, Chapel Hill, N. C.

Mrs. J. Bennett Simmons, Western Kentucky State College, Bowling Green, Ky.

Jack E. Thornton, University of North Carolina, Chapel Hill, N. C.

Vladimir G. Tremblay, 50 Barclay Road, Chapel Hill, N. C.

Charles H. Ufen, P. O. Box 6343, Raleigh, N. C.

G. M. Woodward, 104 Noble Street, Chapel Hill, N. C.

William C. Whitten, Jr., Box 3081, University of Alabama, University, Ala.

ERRATA

In Joseph J. Spengler's article, "The Economy and Polity of Israel," published in the July 1961 issue of this *Journal*, two errors appeared: (1) the first line in the right-hand column, p. 73, should be

the last line in the left-hand column, that is, the fifth line in footnote 10; (2) the figure 1940-48 in lines 22-23 in the right-hand column of p. 77 should be 1950-58.

BOOKS RECEIVED

- Adams, Walter (ed.). *The Structure of American Industry*. 3rd ed. New York: Macmillan Company, 1961. Pp. vi, 603. Paper, \$3.95.
- Adrian, Charles R. (ed.) and others. *Social Science and Community Action*. East Lansing, Mich.: Institute for Community Development and Services, University of Michigan, 1961. Pp. 55. Paper, \$2.00.
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- Baudin, Louis. *A Socialist Empire: The Incas of Peru*. Princeton, N. J.: D. Van Nostrand Company, 1961. Pp. xxii, 442. \$3.00.
- Benoit, Emile. *Europe at Sixes and Sevens: The Common Market, The Free Trade Association, and the United States*. New York: Columbia University Press, 1961. Pp. xx, 275. \$5.00.
- Benson, Charles S. *The Economics of Public Education*. Boston, Mass.: Houghton Mifflin Company, 1961. Pp. xx, 580. \$7.00.
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- Bowman, Edward H. and Fetter, Robert B. *Analysis for Production Management*. Rev. ed. Homewood, Ill.: Richard D. Irwin, 1961. Pp. xiii, 562. \$8.75.
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- Butler, Arthur D. *Labor Economics and Institutions*. New York: Macmillan Company, 1961. Pp. xxi, 595. \$6.50.
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- Grey, Arthur L., Jr. and Elliott, John E. (eds.). *Economic Issues and Policies: Readings in Introductory Economics*. New York: Houghton Mifflin Company, 1961. Pp. xi, 420. Paper, \$3.75.
- Grossman, Norman C. and others (eds.). *Readings in Current Economics*. Rev. ed. Homewood, Ill.: Richard D. Irwin, 1961. Pp. xii, 486. Paper, \$6.00.
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- Reuber, G. L. and Wonnacott, R. J. *The Cost of Capital in Canada: With Special Reference to*

- Public Development of the Columbia River.* Washington, D. C.: Resources for the Future, 1961. Pp. ix, 101. Paper, \$1.50.
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- Rosenberg, R. Robert and Ott, William G. *College Business Law.* 2nd ed. New York: Gregg Publishing Company, 1961. Pp. vi, 570. \$4.75.
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- Smith, Mervin G. and Christian, Carlton F. (eds). *Adjustments in Agriculture: A National Basebook.* Ames, Iowa: Iowa State University Press, 1961. Pp. xvii, 376. \$3.95.
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- Theobald, Robert. *The Challenge of Abundance.* New York: Clarkson N. Potter, 1961. Pp. xiii, 235. \$4.50.
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- Weiss, Leonard W. *Economics and American Industry.* New York: John Wiley & Sons, 1961. Pp. xi, 548. \$7.50.
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- Whittlesey, C. R. *Lectures on Monetary Management.* Bombay, India: Vora & Company, 1960. Pp. 89. Rupees Five.
- Wingo, Lowdon Jr. *Transportation and Urban Land.* Washington, D. C.: Resources for the Future, 1961. Pp. viii, 132. Paper, \$2.00.

RESEARCH GRANTS AND FELLOWSHIPS FOR WORK IN SOUTHERN ECONOMIC DEVELOPMENT

RESEARCH GRANTS AND FELLOWSHIPS FOR WORK IN SOUTHERN ECONOMIC DEVELOPMENT

The Ford Foundation has made available to the Inter-University Committee for Economic Research on the South a grant of \$50,000 per year for five years to support studies on the economic development of the South. A major part of the funds will be allocated as: (1) *research grants* to mature research workers; and (2) *fellowships* to qualified graduate students in the social sciences. Interested parties are invited to apply for funds in accordance with the conditions set forth on the following pages. Recipients of research grants will be recognized as Research Fellows of the Inter-University Committee for Economic Research on the South. Recipients of graduate fellowships will be recognized as Graduate Fellows of the Committee.

The members of the Inter-University Committee for Economic Research on the South are:

JAMES M. BUCHANAN, University of Virginia, Vice Chairman

MELVIN L. GREENHUT, University of Richmond

MAURICE W. LEE, University of North Carolina

JOHN B. McFERRIN, University of Florida

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ERNST W. SWANSON, North Carolina State College, Research
Program Secretary

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RESEARCH GRANTS

Eligible Applicants: Application may be made by any person of demonstrated research ability in the field of the proposed project or by any person who, because of his training and/or performance, shows definite promise of superior research ability in the field in which he proposes to work.

Eligible Projects: The project for which aid is requested should have a direct relevance to the basic problem of the economic growth and development of the South. It may be either theoretical or empirical. It need not be a project which can be completed in one year, although grants will be made for only one year, with no commitments for the future. The Committee will give preference to projects designed to uncover, describe, analyze, and appraise significant new economic develop-

ments in the South. Many of these are not now generally recognized and in some cases can be identified only by intensive research. The Committee will also give preference to projects which will be completed within two or three years and which are designed to produce publishable manuscripts. Limited funds will be available to subsidize the publication of acceptable manuscripts.

Stipends: Within limits, stipends will be adapted to the needs of the individual applicant. Usually they will not exceed \$5,000; they may be for any amount below that figure if the applicant can profitably use such an amount. The Committee will regard with special favor requests for amounts between \$500 and \$1,000 where such amounts will be necessary and sufficient to permit the completion of projects already under way. Generally speaking, The Committee aims to provide amounts which will be sufficient to allow the applicant to be relieved of teaching and other major activities so that he can devote to his project the whole of one summer and/or up to one half of an academic year. Before payment is made on a grant the applicant will be expected to submit to the Research Program Secretary a certification from the proper authority that he has been relieved from teaching or other duties in accordance with the terms of the application. The stipend may include, where appropriate, funds to cover travel and other necessary expenses in addition to the reimbursement of salary given up.

Applications: Applications should contain, as a minimum, three statements: (A) the amount needed, within the limits stated above, showing the amount of salary to be given up as a result of the reduced work load; (B) a summary outline and description of the project, showing its relevance to southern economic development and including a statement of progress to date, if any, and an estimate of the date of completion and the possibilities of publication; and (C) a statement of the applicant's competence to carry out the project, including his educational record, a list of positions held, and a bibliography of his publications.

Filing Date: Ten copies of the application must be filed with Ernst W. Swanson, North Carolina State College, Harrelson 121, Raleigh, N. C. not later than *January 30, 1962*. Announcement of actions taken on applications will be made about March 1, 1962.

GRADUATE FELLOWSHIPS

A limited number of fellowships will be available to qualified graduate students in the social sciences to enable them to complete work on their dissertations.

Eligible Students: To be eligible for a fellowship a graduate student must: (A) have passed his preliminary examinations for the Ph.D. degree and be a candidate for that degree in a recognized southern institu-

tion; and (B) have received approval of a topic within the area of southern economic development as the subject of his dissertation. A successful applicant will be expected to devote essentially the whole of one academic year, or as much of it as may be required, to the completion of his dissertation.

A student who does not now meet the above qualifications but expects to meet them by November 1, 1962, may apply, provided that any fellowship granted to him will be contingent upon his meeting the qualifications by that date.

Stipends: Stipends will vary up to \$2,500 and will be designed to allow the applicant to work full time on his dissertation for one academic year. Applications for amounts up to \$800 for summer work in 1962 will also be considered, but one person may not receive a total of more than \$2,500 in grants. Applicants are asked to estimate the minimum grant needed to complete their dissertations and to indicate their marital status.

Applications: The application should include: (A) the name of the chairman of the applicant's thesis committee; (B) a brief description of the thesis project; (C) a statement of progress to date and plans for completion (the latter should include a specific work plan for the period the fellowship will be in effect); and (D) the names of three persons competent to appraise the applicant's work and whom he has asked to write letters supporting the application. Ten copies of these letters should be sent directly to the Research Program Secretary. The application should be accompanied by a transcript of the applicant's graduate work.

Filing Date: Ten copies of the application must be filed with Ernst W. Swanson, North Carolina State College, Harrelson 121, Raleigh, N. C. not later than *January 30, 1962*. Announcement of awards will be made about March 1, 1962.



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